



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 11, 2004

U.S. Army Corps of Engineers
Raleigh Field Office
6508 Falls of the Neuse Road/Suite 120
Raleigh, NC 27615

ATTENTION: Mr. John Thomas, Jr.,
NCDOT Coordinator

Dear Sir:

SUBJECT: **Nationwide 23 and 33 Permit Application** for the replacement of
Bridge No. 227 over Beaver Creek on SR 3000 (McConnell Road) in
Guilford County, Federal Project No. BRZ-3000 (2), State Project No.
82495501, WBS Element 33195.1.1, T.I.P. No. B-3649.

Please find enclosed three copies of the Categorical Exclusion (CE) Document, permit drawings, and design plan sheets. The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 227 over Beaver Creek (Little Alamance Creek) on SR 3000 (McConnell Road). The project involves replacing the existing 49-foot bridge with a 160-foot long bridge. The new bridge will be built on existing alignment and will consist of three spans. SR 3000 will be widened to accommodate two 12-foot travel lanes and an 8-foot shoulder on each side. Two temporary causeways will provide construction access for drilled shaft installation for Bridge No. 227. The causeways will be built using Class II riprap with smaller Class A rock on top. Traffic will be detoured offsite along portions of SR 3000 (McConnell Rd.), SR 3045 (Mt. Hope Church Rd.), and SR 3143 (Millstream Rd.) during construction.

IMPACTS TO WATERS OF THE UNITED STATES

The project is located within the Cape Fear River Basin (03-06-03 sub-basin). Beaver Creek is the only water resource in the project area. The project will result in 0.024 acres of temporary fill in surface water to Beaver Creek from the placement of two temporary causeways. Best Management Practices for Protection of Surface Waters will be implemented as applicable.

Beaver Creek is a well-defined perennial stream with moderate flow. The stream averages 20 to 30 feet in width with a water depth of 2 to 4 feet. Directly beneath the existing bridge, the creek

is slightly wider and is 30 to 40 feet. The substrate is comprised primarily of sand, gravel, cobble, and boulders and there is a well-defined bed and bank. Beaver Creek has been assigned DWQ Index No. 16-19-3-(4) by the North Carolina Division of Water Quality and best usage classifications of WS-IV NSW.

Temporary Impacts

Impacts from this project consist of 0.024 acres of temporary fill in Beaver Creek. Impacts stem from two temporary causeways that will be used to remove existing bridge and build the new bridge. The causeway on the north side of bridge will be used to remove the interior bent of existing bridge, installation of drilled shafts on north side of creek, and placement of girders. The length of time the north causeway will be in the water is approximately eight months, after which it will be removed. A second causeway on the south side of the bridge is needed to avoid getting the equipment in the stream due to the short distance between the creek and the area where installation of drilled shafts will occur. The south causeway will be used for installation of the drilled shafts on south side of creek. In order for the 70-foot girders to be placed, construction equipment will return to the north causeway for the remainder of the project. Therefore, the south causeway will be in the water in conjunction with the north causeway for approximately one month, after which it will be removed.

Bridge Demolition

Bridge No. 227 was built in 1952 and is 49 feet long and 24 feet wide. The superstructure is composed of a timber deck on steel I-beams. The substructure is composed of a masonry vertical abutment on one end and a timber cap and pile vertical abutment on the other with a masonry pier in the middle. Removal of the superstructure and the substructure will not create any temporary fill into waters of the United States. Although removal of the substructure may create some disturbance in the streambed, conditions in the stream will not raise sediment concerns, therefore a turbidity curtain is not recommended.

Restoration Plan

Removal and Disposal Plan: The contractor will be required to submit a reclamation plan for the removal of and disposal of all material off-site at an upland location. The contractor will use excavation equipment to remove the riprap used for the temporary causeways for Bridge No. 227. Heavy-duty trucks, dozers, cranes and various other pieces of mechanical equipment necessary for construction of roadways and bridges will be used on site. All material placed in the stream will be removed from the stream at that time. The contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of project. After the temporary causeways are no longer needed, all temporary materials will become the property of the contractor.

Following construction of the bridge, all material used in the construction of the structure will be removed. The impact area associated with the bridge is expected to recover naturally, since the natural streambed and plant material will not be removed. NCDOT does not propose any additional planting in this area. Class I riprap and filter fabric will be used for bank stabilization. Pre-project elevations will be restored. NCDOT will restore stream to its pre-project contours.

Schedule: The project calls for a letting of July 20, 2004 with a date of availability of August 30, 2004. It is expected that the contractor will choose to start construction in August.

MITIGATION OPTIONS

Avoidance, Minimization, and Mitigation: The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

According to the Clean Water Act (CWA) §404(b)(1) guidelines, NCDOT must avoid, minimize, and mitigate, in sequential order, impacts to waters of the US. The following is a list of the project's jurisdictional stream avoidance/minimization activities proposed or completed by NCDOT:

Avoidance/Minimization:

- The bridge will be replaced with another bridge instead of the original project design of a culvert.
- The new bridge will be 111 feet longer than the existing bridge.
- The bridge will span Beaver Creek with no bents in the water.
- An offsite detour will be used.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in jurisdictional waters of the US and that the proposed action includes all practicable methods to avoid and/or minimize jurisdictional stream impacts that may result from such use. The impacts from this project do not meet the minimum mitigation threshold of 150 linear feet of stream. Therefore, no mitigation is proposed.

FEDERALLY-PROTECTED SPECIES

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003 the United States Fish and Wildlife Service (FWS) lists one federally protected species for Guilford County, the bald eagle (*Haliaeetus leucocephalus*). A biological conclusion of "No Effect" due to lack of suitable habitat remains valid for the bald eagle.

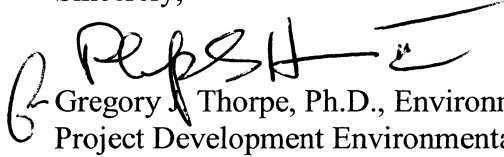
REGULATORY APPROVALS

Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (67 FR 2020; January 15, 2002). We are also requesting the issuance of a Nationwide Permit 33 authorizing use of temporary causeways in the stream for bridge construction.

Section 401 Permit: We anticipate 401 General Water Quality Certification (WQC) 3403 and 3366 will apply to this project. The NCDOT will adhere to all general conditions of these WQCs. Therefore, written concurrence from the NCDWQ is not required. In accordance with 15A NCAC 2H 0.0501(a) and 15A NCAC 2B 0.200 we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, as notification.

A copy of this permit application will be posted on the NCDOT website at: <http://www.ncdot.org/planning/pe/naturalunit/Permit.html>. If you have any questions or need additional information please call Ms. Deanna Riffey at (919) 715-1409.

Sincerely,


Gregory J. Thorpe, Ph.D., Environmental Management Director,
Project Development Environmental Analysis Branch

Cc:

w/attachment

Mr. John Hennessy, Division of Water Quality (2 copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Greg Perfetti, P.E., Structure Design

w/o attachment

Mr. David Franklin, USACE, Wilmington
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. J. M. Mills, P.E.
Mr. Jerry Parker, DEO
Ms. Marie Sutton, PDEA Project Planning Engineer

Office Use Only:

Form Version May 2002

USACE Action ID No. _____ DWQ No. _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:

<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Riparian or Watershed Buffer Rules
<input type="checkbox"/> Section 10 Permit	<input type="checkbox"/> Isolated Wetland Permit from DWQ
<input type="checkbox"/> 401 Water Quality Certification	
2. Nationwide, Regional or General Permit Number(s) Requested: NW 23 and 33
3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☒
4. If payment into the North Carolina Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), complete section VIII and check here: ☐
5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
Name: NCDOT
Mailing Address: Project Development & Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548
Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
E-mail Address: gthorpe@dot.state.nc.us
2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
Name: _____
Company Affiliation: _____
Mailing Address: _____

Telephone Number: _____ Fax Number: _____
E-mail Address: _____

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Replacement of Bridge No. 227 on SR 3000 (McConnell Rd) over Beaver Creek in Guilford County
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3649
3. Property Identification Number (Tax PIN): _____
4. Location
County: Guilford Nearest Town: Greensboro
Subdivision name (include phase/lot number): _____
Directions to site (include road numbers, landmarks, etc.): Southeast of Greensboro, 85 North, Exit 130 SR 3000 (McConnell Rd) South. Bridge located approximately 4 miles on McConnell Road.

5. Site coordinates, if available (UTM or Lat/Long): 36° 2' 44" N / 79° 39' 98" W
(Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
6. Property size (acres): Approximately 0.29 acres
7. Nearest body of water (stream/river/sound/ocean/lake): Beaver Creek
8. River Basin: Cape Fear
(Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at <http://h2o.enr.state.nc.us/admin/maps/>.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: SR 3000 is a rural local route. Land use in the project area is rural with scattered residential development.
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10. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing Bridge No. 227 on existing alignment. Bridge No. 227 will be 160 feet long and will consist of three spans. SR 3000 will be widened to accommodate two 12-foot travel lanes and an 8-foot shoulder on each side. Two temporary causeways will provide construction access for drilled shaft installation for Bridge No. 227. Traffic will be detoured offsite along portions of SR 3000 (McConnell Rd.), SR 3045 (Mt. Hope Church Rd.), and SR 3143 (Millstream Rd.) during construction. Once the new bridge is completed, the old roadway, causeways, and bridge material will be removed. Construction will be performed using heavy equipment such as dozers, loaders and cranes.
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-
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11. Explain the purpose of the proposed work: Bridge No. 227 is considered to be structurally deficient and functionally obsolete,
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-
-

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules.

N/A

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.

N/A

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. The applicant must also provide justification for these impacts in Section VII below. All proposed impacts, permanent and temporary, must be listed herein, and must be clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) must be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: Impacts from this project consist of 0.024 acres of temporary fill to Beaver Creek from the usage of two temporary causeways that will be used to remove existing bridge and build the new bridge. There are no wetland impacts for this project.

1. Individually list wetland impacts below:

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***
N/A					

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

** 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at <http://www.fema.gov>.

*** List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: N/A

Total area of wetland impact proposed: N/A

2. Individually list all intermittent and perennial stream impacts below:

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
Site 1 2 Causeways	Temporary	0.024 acres	Beaver Creek	25 feet	Perennial

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated riprap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, riprap, crib wall, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included.

** Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at www.usgs.gov. Several internet sites also allow direct download and printing of USGS maps (e.g., www.topozone.com, www.mapquest.com, etc.).

Cumulative impacts (linear distance in feet) to all streams on site: 0.024 acres

3. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.) below:

Open Water Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Name of Waterbody (if applicable)	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)
N/A				

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: fill, excavation, dredging, flooding, drainage, bulkheads, etc.

5. Pond Creation

If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.

Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): _____

Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.): _____

Size of watershed draining to pond: _____ Expected pond surface area: _____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts.

Impacts to Site 1 cannot be avoided but are minimized with the use of NCDOT's Best Management Practices for the Protection of Surface Waters, replacement of a bridge with another bridge instead of the original project design of a culvert, lengthening bridge 111 feet, spanning Beaver Creek with no bents in the water and an offsite detour.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCWRP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at <http://h2o.enr.state.nc.us/ncwetlands/strmgide.html>.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.

N/A

2. Mitigation may also be made by payment into the North Carolina Wetlands Restoration Program (NCWRP). Please note it is the applicant's responsibility to contact the NCWRP at (919) 733-5208 to determine availability and to request written approval of mitigation prior to submittal of a PCN. For additional information regarding the application process for the NCWRP, check the NCWRP website at <http://h2o.enr.state.nc.us/wrp/index.htm>. If use of the NCWRP is proposed, please check the appropriate box on page three and provide the following information:

Amount of stream mitigation requested (linear feet): _____
Amount of buffer mitigation requested (square feet): _____
Amount of Riparian wetland mitigation requested (acres): _____
Amount of Non-riparian wetland mitigation requested (acres): _____
Amount of Coastal wetland mitigation requested (acres): _____

IX. Environmental Documentation (required by DWQ)

Does the project involve an expenditure of public (federal/state) funds or the use of public (federal/state) land?

Yes ☒ No ☐

If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)?

Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.

Yes ☒ No ☐

If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter.

Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify _____)?

Yes ☐ No ☒ If you answered "yes", provide the following information:

Identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3	
2		1.5	
Total			

* Zone 1 extends out 30 feet perpendicular from near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Conservation Easement, Riparian Buffer Restoration / Enhancement, Preservation or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0260.

XI. Stormwater (required by DWQ)

Describe impervious acreage (both existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property.

N/A

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.

N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?

Yes ☐

No ☒

Is this an after-the-fact permit application?

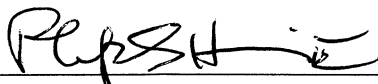
Yes ☐

No ☒

XIV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).

N/A

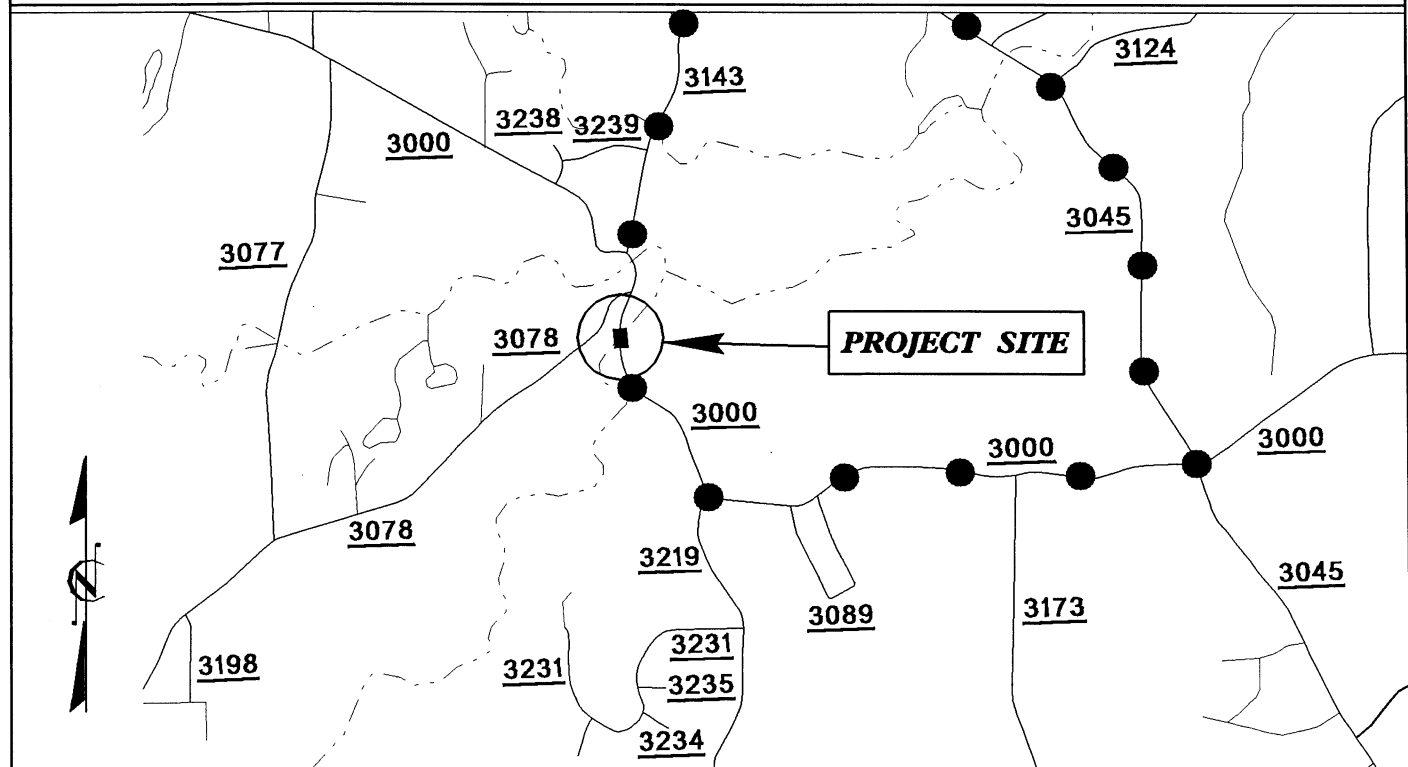
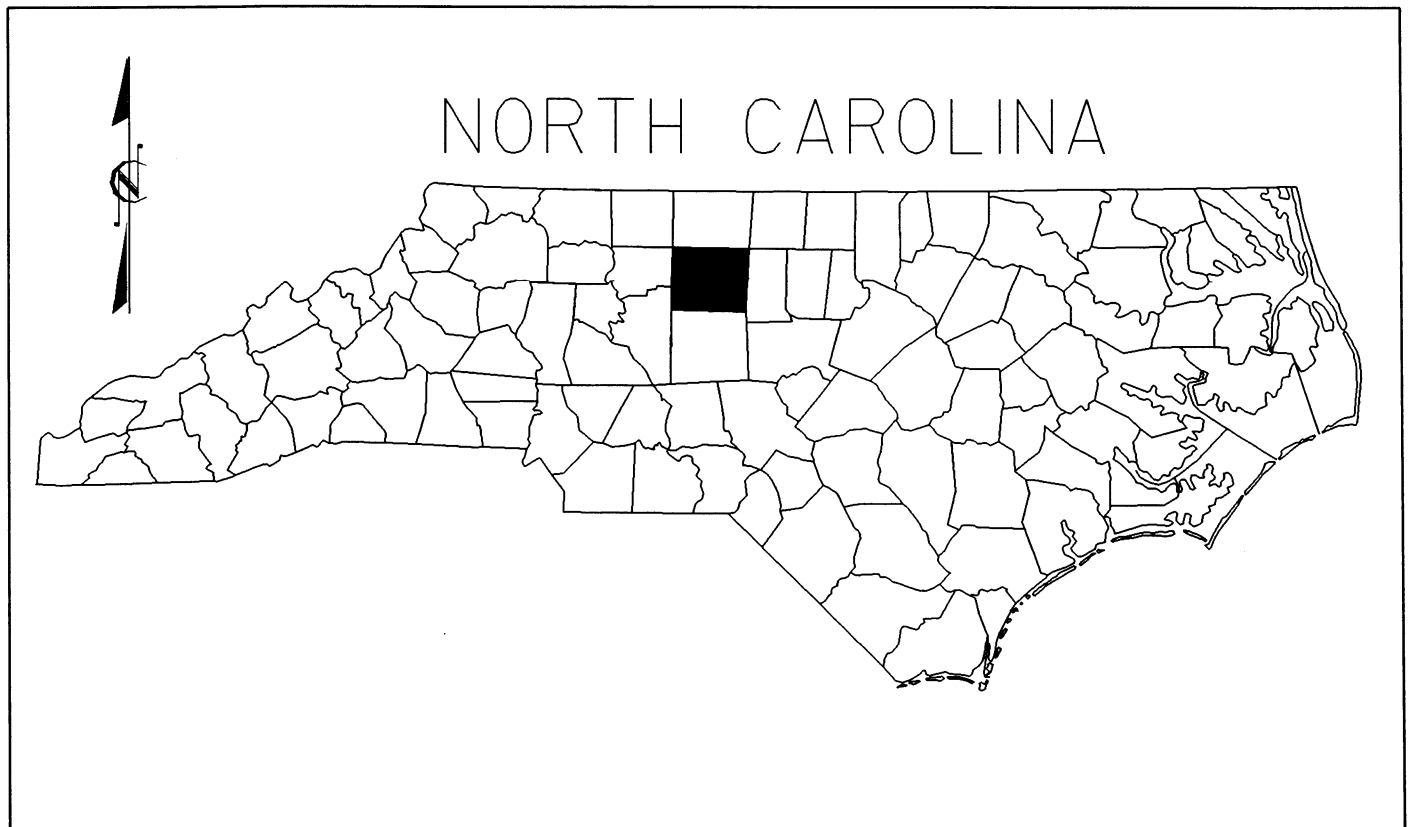


Applicant/Agent's Signature

5/10/04

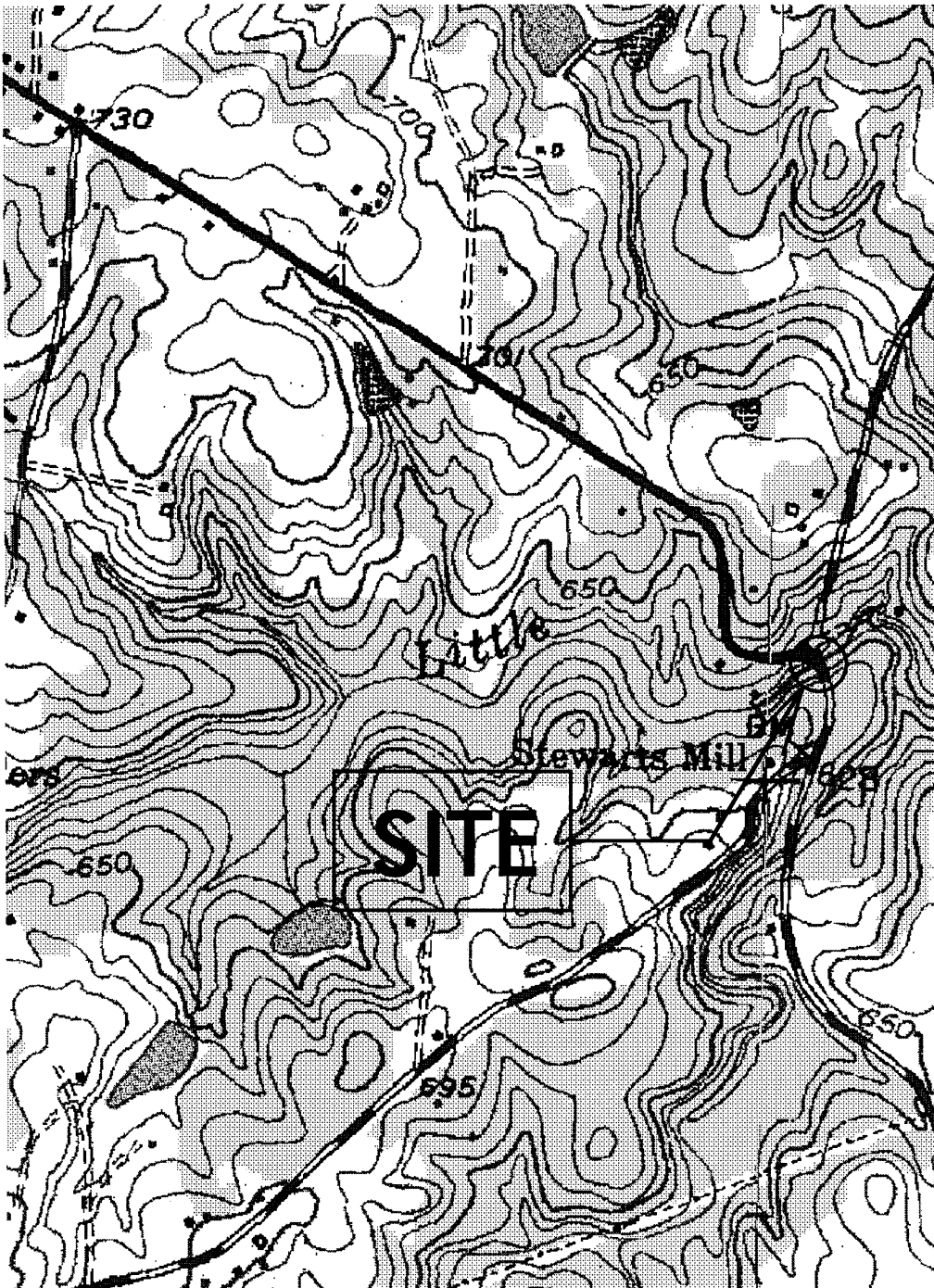
Date

(Agent's signature is valid only if an authorization letter from the applicant is provided.)



VICINITY MAPS

NCDOT
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 8.2495501 (B-3649)
 BRIDGE NO.227 OVER BEAVER
 CREEK AND APPROACHES ON
 SR 3000 (McCONNELL RD.)



NOT TO SCALE

SITE MAP

NCDOT

**DIVISION OF HIGHWAYS
GUILFORD COUNTY**

**PROJECT: 8.2495501 (B-3649)
BRIDGE NO.227 OVER BEAVER
CREEK AND APPROACHES ON
SR 3000 (McCONNELL RD.)**

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
B-3649	4
PERMIT SHEET NO.	3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-
PI Sta 16+15.01
 $\Delta = 46^{\circ}26'58.5"$ (RT)
 $D = 416'32.9"$
 $L = 1086.32'$
 $T = 575.00'$
 $R = 1340.00'$
SE = 06
RO = SEE PLANS

-L- POT Sta. 10+00.00
BEGIN PROJECT B-3649

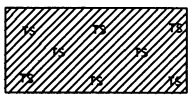
-L- PC Sta. 10+40.01

-L- POT Sta. 22+00.00
END PROJECT B-3649

-L- PT Sta. 21+26.33

-L- POT Sta. 24+00.91

NAD 83



- SURFACE WATER

FRED R. LAIL JR.
DB 4350 PG 1364

BEVERLY BRESLYN
WILL 80-E-840
DB 1004 PG 185

BEVERLY BRESLYN
WILL 80-E-840
DB 1004 PG 185

BEVERLY BRESLYN
WILL 80-E-840
DB 1004 PG 185

THE KIM FAMILY LIMITED PARTNERSHIP
DB 4637 PG 2063

STEVEN C. LOWDERMILK
DB 3452 PG 144

JOHN K. KIM
DB 4525 PG 976

THE KIM FAMILY LIMITED PARTNERSHIP
DB 4637 PG 2063

8/17/99

REVISIONS

SYSTEM TIME 8/17/99 10:00:00 AM
C:\PROJECTS\B-3649\B-3649.DWG
PLOT DATE 8/17/99 10:00:00 AM
PLOT BY JLM



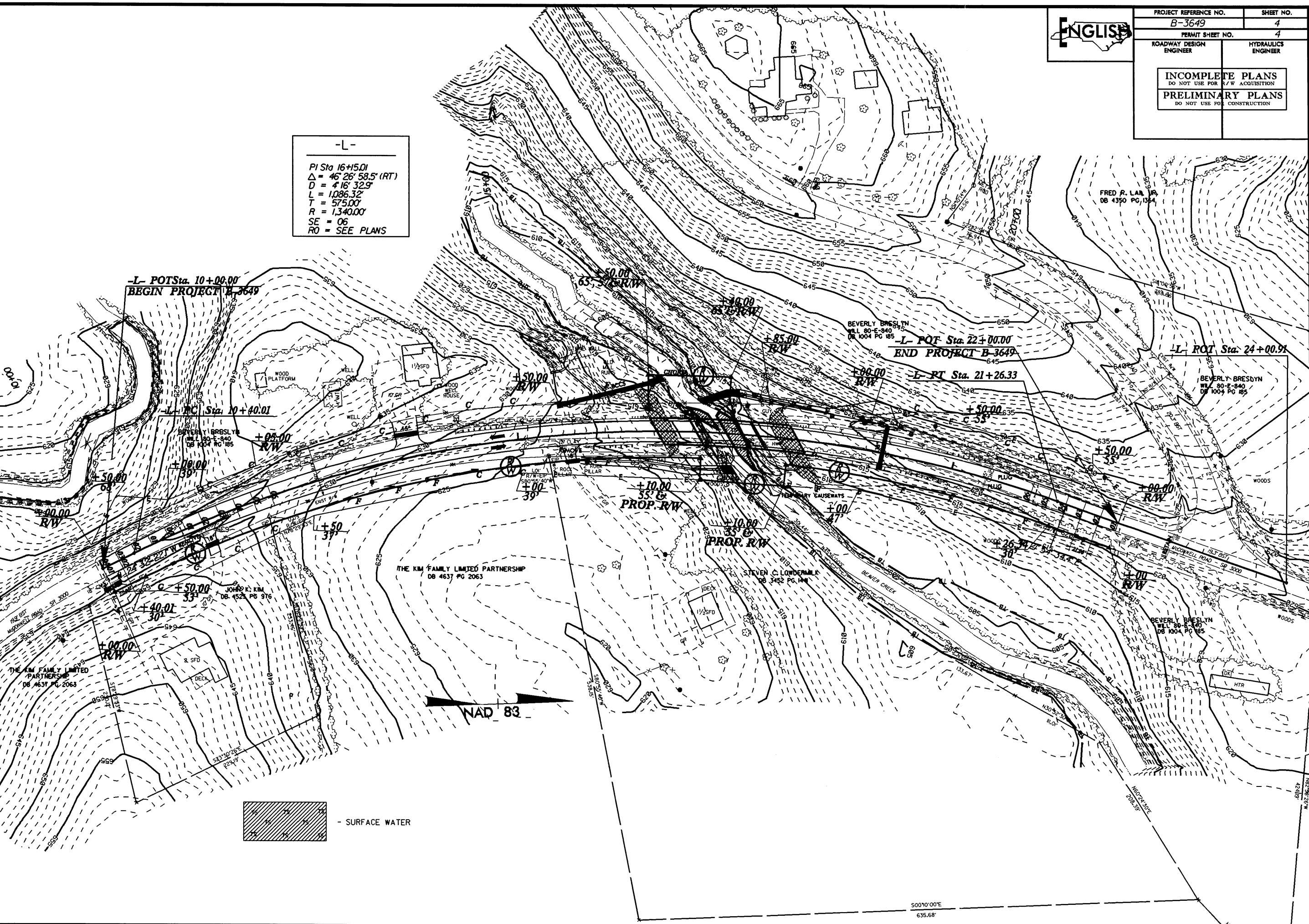
PROJECT REFERENCE NO.		SHEET NO.
B-3649		4
PERMIT SHEET NO.		4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-L-
PI Sta 16+15.01
 $\Delta = 46^{\circ} 26' 58.5''$ (RT)
 $D = 416' 32.9''$
 $L = 1086.32'$
 $T = 575.00'$
 $R = 1,340.00'$
 $SE = 06$
 $RO = \text{SEE PLANS}$

-L- POT Sta. 10+00.00
BEGIN PROJECT B-3649

-L- POT Sta. 22+00.00
END PROJECT B-3649

-L- POT Sta. 24+00.00



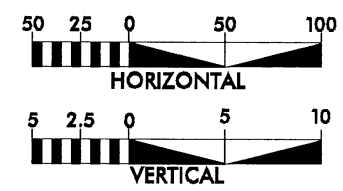
- SURFACE WATER

REVISIONS

8/17/99

500'0.00'E
635.68'

REVISIONS

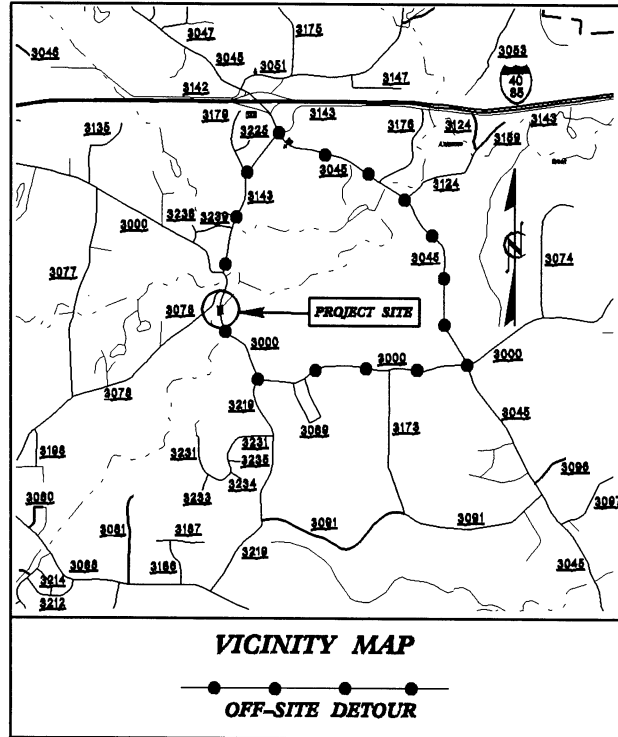


09/08/99

TIP PROJECT: B-3649

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



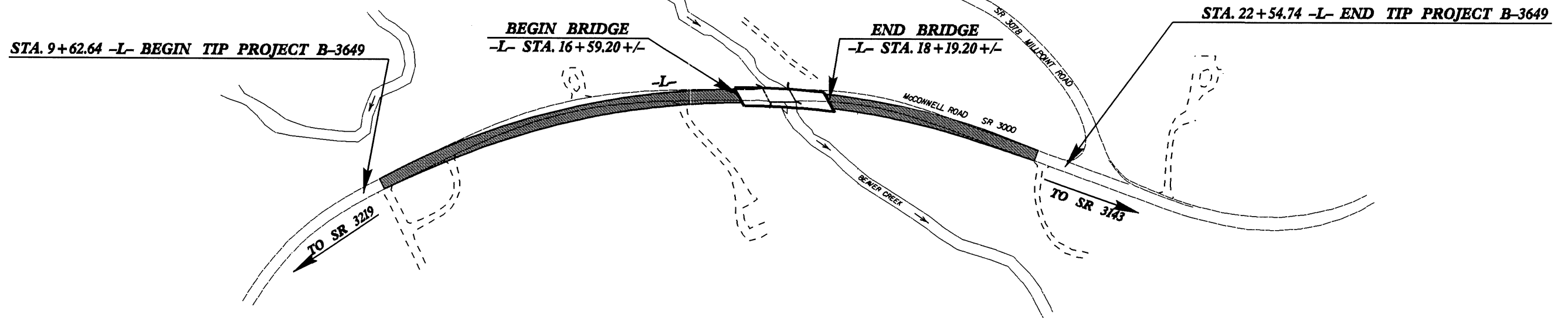
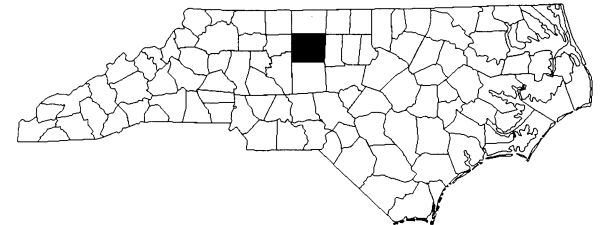
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: BRIDGE NO. 227 OVER BEAVER CREEK
AND APPROACHES ON SR 3000 (McCONNELL ROAD)

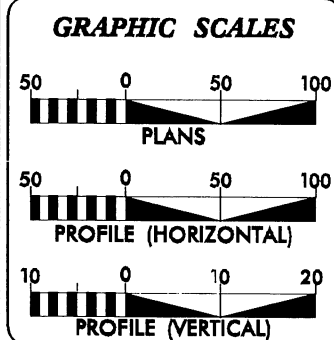
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3649	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33195.1.1	BRZ-3000(2)	P.E.	
33195.2.1	BRZ-3000(2)	RW & UTIL.	



CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA	
ADT 2003 =	1600 VPD
ADT 2025 =	2700 VPD
DHV =	11 %
D =	68 %
* T =	5 %
V =	50 MPH
* (TTST 1% + DUAL 4%)	
FUNC CLASS =	RURAL LOCAL

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT B-3649 =	0.215 MI
LENGTH STRUCTURE TIP PROJECT B-3649 =	0.030 MI
TOTAL LENGTH OF TIP PROJECT B-3649 =	0.245 MI

Prepared In the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610	
2001 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JUNE 30, 2003	GLENN W. MUMFORD, PE PROJECT ENGINEER
LETTING DATE: JUNE 15, 2004	PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER	
SIGNATURE:	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE:	P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
STATE DESIGN ENGINEER	P.E.
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED DIVISION ADMINISTRATOR	DATE

13-JAN-2004 11:28
R:\PROJ\B3649\TSD
sloquley AT RD212301

[illegible]

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
NG = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

[illegible]

*** ASPHALT PAVEMENT
REMOVAL SUMMARY
IN SQUARE YARDS**

LINE	STATION TO STATION	REMOVAL	BREAK-UP
—	11+00.00 TO 12+50.00	631	
—	12+50.00 TO 15+50.00	5970	
—	15+50.00 TO 16+50.00		1990
—	18+35.00 TO 19+50.00		2220
—	17+60.00 TO 18+35.00	1448	
—	19+50.00 TO 20+90.00	348	
	TOTAL	8397	3210
	SAY	8400	3215

* APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".
NOTE: BORROW EXCAVATION WILL BE PAID FOR AS A SEPARATE PAY ITEM.

* SUMMARY OF EARTHWORK IN CUBIC YARDS














LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- STA. 10 + 00.00 TO 16 + 59.20 +/- (BEGIN BRIDGE)	1503		1966	1175	
-L- STA. 18 + 19.20 +/- (END BRIDGE) TO 22 + 00.00	912		1420	508	
PROJECT SUBTOTAL	1703		3386	1683	
SHOULDER MATERIAL			670	670	
LOSS DUE TO CLEARING & GRUBBING	-200			200	
PROJECT TOTAL	1503		4056	2553	
ESTIMATED 5% TO REPLACE TOPSOIL ON BORROW PIT			128	128	
GRAND TOTAL	1503		4184	2681	
SAY	1550			2700	

EST. DRAINAGE DITCH EXCAVATION = 95 CY
EST. UNDERCUT = 500 CY



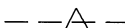




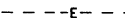
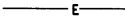
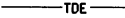
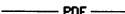
*S.U.E = SUBSURFACE UTILITY ENGINEER

CONVENTIONAL SYMBOLS










ROADS & RELATED ITEMS

Edge of Pavement	
Curb	
Prop. Slope Stakes Cut	
Prop. Slope Stakes Fill	
Prop. Woven Wire Fence	
Prop. Chain Link Fence	
Prop. Barbed Wire Fence	
Prop. Wheelchair Ramp	
Curb Cut for Future Wheelchair Ramp	
Exist. Guardrail	
Prop. Guardrail	
Equality Symbol	
Pavement Removal	

RIGHT OF WAY

Baseline Control Point	
Existing Right of Way Marker	
Exist. Right of Way Line w/Marker	
Prop. Right of Way Line with Proposed	
R/W Marker (Iron Pin & Cap)	
Prop. Right of Way Line with Proposed	
(Concrete or Granite) R/W Marker	
Exist. Control of Access Line	
Prop. Control of Access Line	
Exist. Easement Line	
Prop. Temp. Construction Easement Line	
Prop. Temp. Drainage Easement Line	
Prop. Perm. Drainage Easement Line	






HYDROLOGY

Stream or Body of Water	
River Basin Buffer	
Flow Arrow	
Disappearing Stream	
Spring	
Swamp Marsh	
Shoreline	
Falls, Rapids	
Prop Lateral, Tail, Head Ditches	





































STRUCTURES






















MAJOR
Bridge, Tunnel, or Box Culvert ----- ☐ CONC ☐
Bridge Wing Wall, Head Wall
and End Wall ----- ☐ CONC WW ☐

MINOR






Head & End Wall _____  **CONC HW**
Pipe Culvert _____ 
Footbridge _____ 
Drainage Boxes _____  **CB**
Paved Ditch Gutter _____ 

UTILITIES














Exist. Pole	
Exist. Power Pole	
Prop. Power Pole	
Exist. Telephone Pole	
Prop. Telephone Pole	
Exist. Joint Use Pole	
Prop. Joint Use Pole	
Telephone Pedestal	
UG Telephone Cable Hand Hold	
Cable TV Pedestal	
UG TV Cable Hand Hold	
UG Power Cable Hand Hold	
Hydrant	
Satellite Dish	
Exist. Water Valve	
Sewer Clean Out	
Power Manhole	
Telephone Booth	
Cellular Telephone Tower	
Water Manhole	
Light Pole	
H-Frame Pole	
Power Line Tower	
Pole with Base	
Gas Valve	
Gas Meter	
Telephone Manhole	
Power Transformer	
Sanitary Sewer Manhole	
Storm Sewer Manhole	
Tank; Water, Gas, Oil	
Water Tank With Legs	
Traffic Signal Junction Box	
Fiber Optic Splice Box	
Television or Radio Tower	
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement	

Recorded Water Line	
Designated Water Line (S.U.E.*)	
Sanitary Sewer	
Recorded Sanitary Sewer Force Main	
Designated Sanitary Sewer Force Main(S.U.E.*)	
Recorded Gas Line	
Designated Gas Line (S.U.E.*)	
Storm Sewer	
Recorded Power Line	
Designated Power Line (S.U.E.*)	
Recorded Telephone Cable	
Designated Telephone Cable (S.U.E.*)	
Recorded U/G Telephone Conduit	
Designated U/G Telephone Conduit (S.U.E.*)	
Unknown Utility (S.U.E.*)	
Recorded Television Cable	
Designated Television Cable (S.U.E.*)	
Recorded Fiber Optics Cable	
Designated Fiber Optics Cable (S.U.E.*)	
Exist. Water Meter	
U/G Test Hole (S.U.E.*)	
Abandoned According to U/G Record	ATTUR
End of Information	E.O.I.



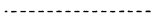


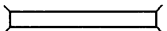
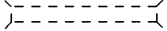

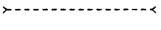



BOUNDARIES & PROPERTIES

State Line	_____	_____
County Line	_____	_____
Township Line	_____	_____
City Line	_____	_____
Reservation Line	_____	_____
Property Line	_____	_____
Property Line Symbol	_____	
Exist. Iron Pin	_____	
Property Corner	_____	_____
Property Monument	_____	
Property Number	_____	
Parcel Number	_____	
Fence Line	_____	— X — X — X —
Existing Wetland Boundaries	_____	WW & ISBW
High Quality Wetland Boundary	_____	— WLB
Medium Quality Wetland Boundaries	_____	— HQ WLB
Low Quality Wetland Boundaries	_____	— MQ WLB
Proposed Wetland Boundaries	_____	— LQ WLB
Existing Endangered Animal Boundaries	_____	— WLB
Existing Endangered Plant Boundaries	_____	— EAB
	_____	— EPB


BUILDINGS & OTHER CULTURE


Buildings	
Foundations	
Area Outline	
Gate	
Gas Pump Vent or U/G Tank Cap	
Church	
School	
Park	
Cemetery	
Dam	<hr/>
Sign	
Well	
Small Mine	
Swimming Pool	


TOPOGRAPHY


Loose Surface	
Hard Surface	
Change in Road Surface	
Curb	
Right of Way Symbol	R/W
Guard Post	○ GP
Paved Walk	
Bridge	
Box Culvert or Tunnel	
Ferry	
Culvert	
Footbridge	
Trail, Footpath	
Light House	


VEGETATION


Single Tree 

Single Shrub 

Hedge 

Woods Line 

Orchard 

Vineyard 

RAILROADS

Standard Gauge -----

RR Signal Milepost -----

Switch -----

CS-1 TRANSPORTATION

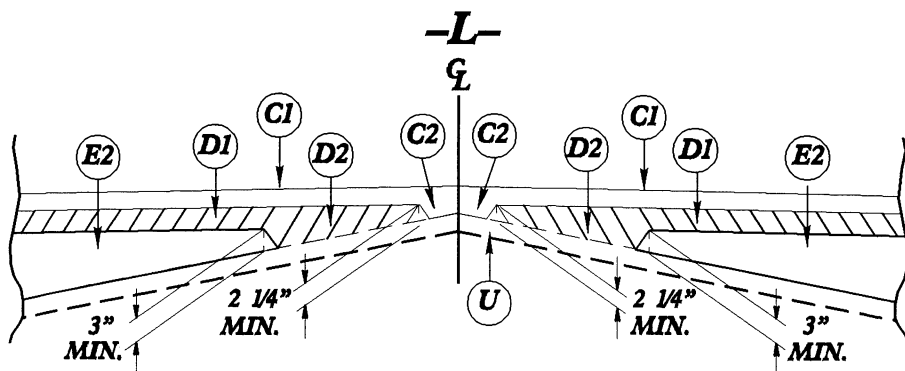
⊙

WILEPOST 35

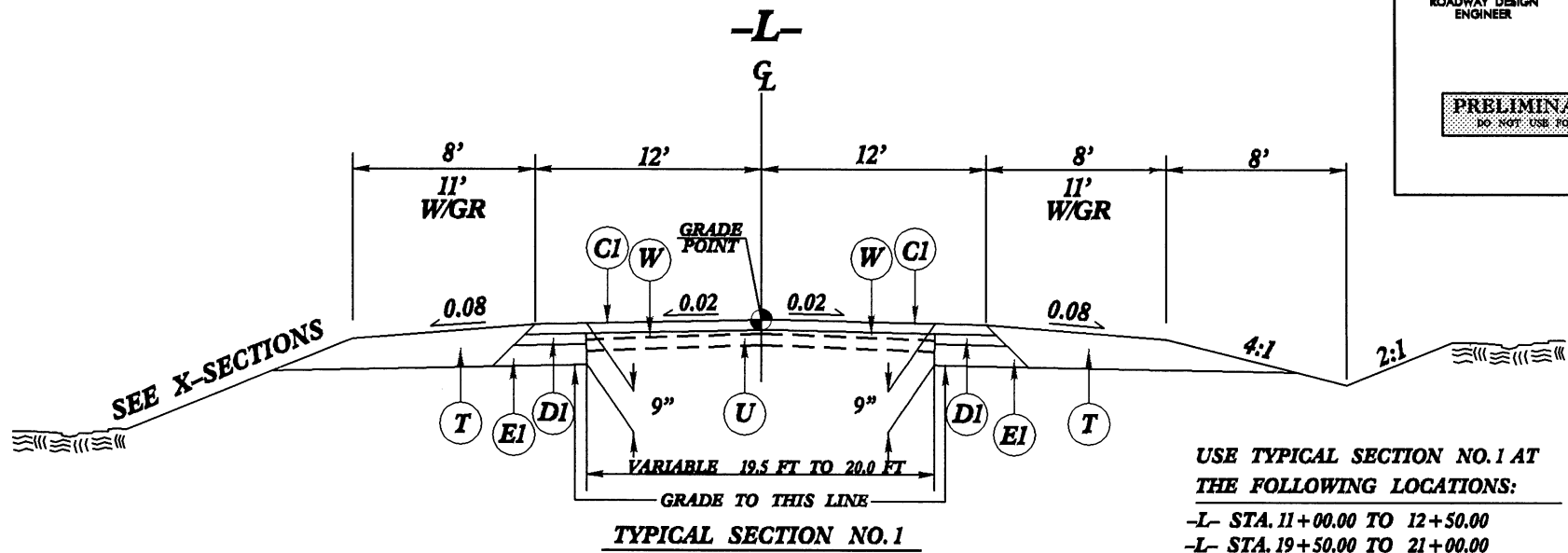
SWITCH

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1 1/4" IN DEPTH OR GREATER THAN 1 1/2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

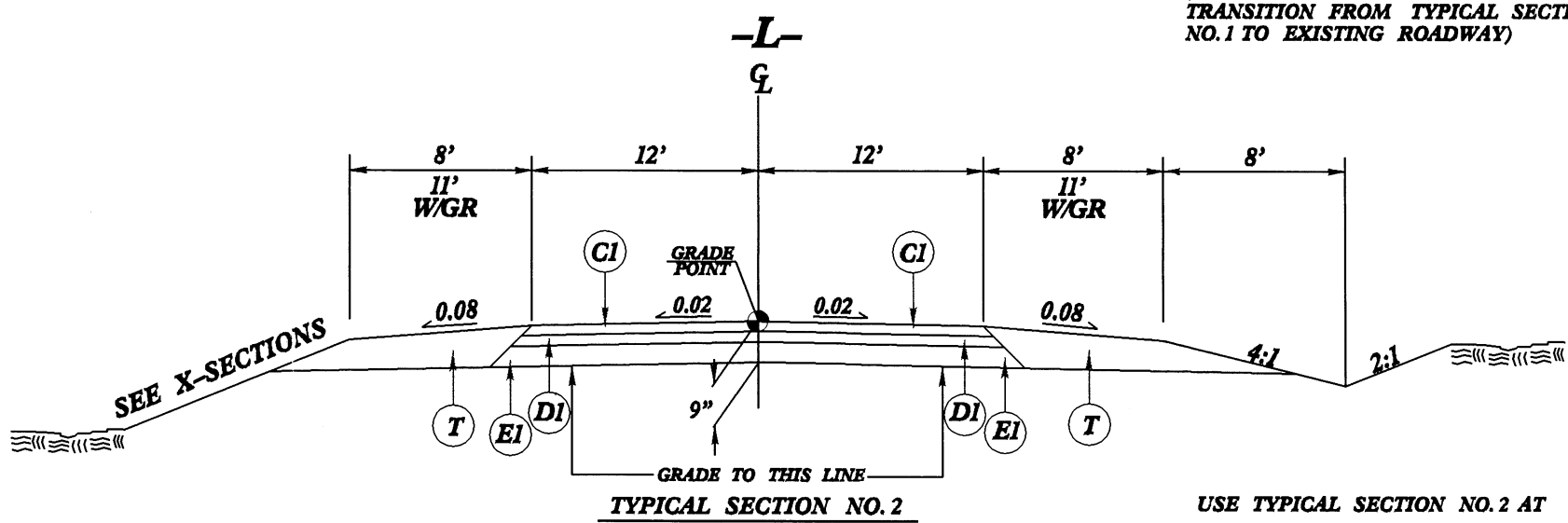


DETAIL SHOWING METHOD OF WEDGING
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1



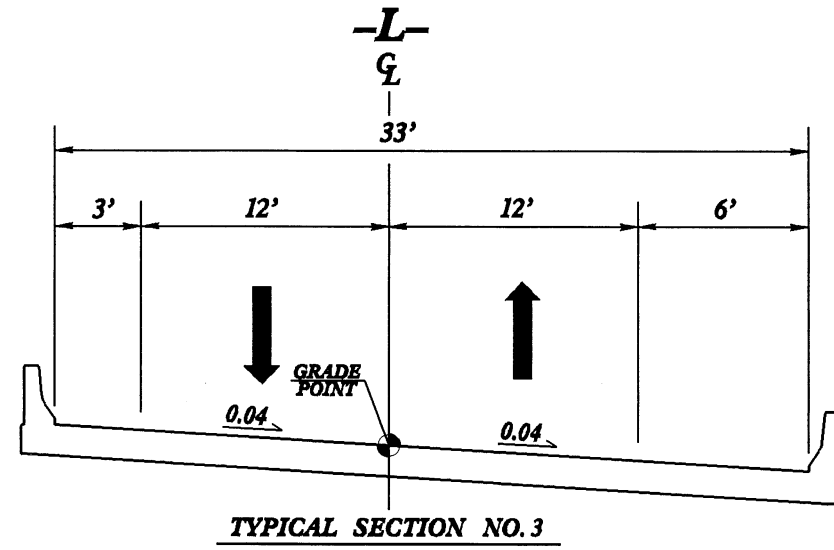
USE TYPICAL SECTION NO. 1 AT
THE FOLLOWING LOCATIONS:

- L- STA. 11+00.00 TO 12+50.00
- L- STA. 19+50.00 TO 21+00.00
- (-L- STA. 10+00.00 TO STA. 11+00.00
TRANSITION FROM EXISTING ROADWAY
TO TYPICAL SECTION NO. 1)
- (-L- STA. 21+00.00 TO 22+00.00
TRANSITION FROM TYPICAL SECTION
NO. 1 TO EXISTING ROADWAY)



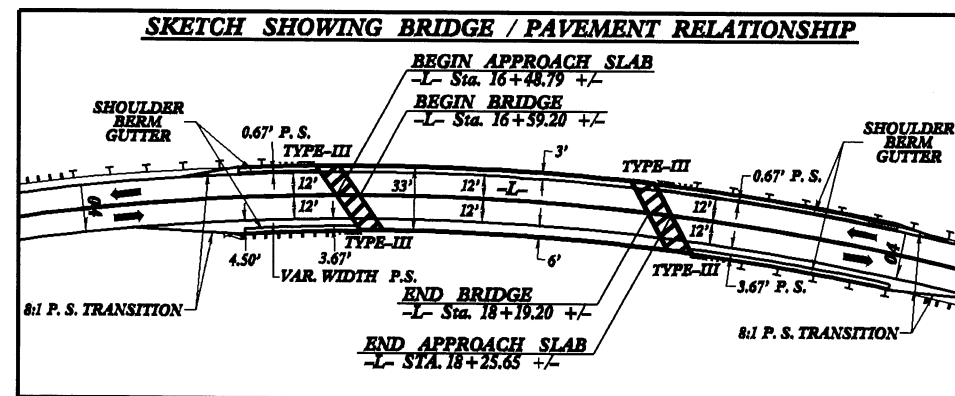
USE TYPICAL SECTION NO. 2 AT
THE FOLLOWING LOCATIONS:

- L- STA. 12+50.00 TO 16+59.20 +/- (BEGIN BRIDGE)
- L- STA. 18+19.20 +/- (END BRIDGE) TO 19+50.00



USE TYPICAL SECTION NO. 3 AT
THE FOLLOWING LOCATIONS:

- L- STA. 16+59.20 +/- (BEGIN BRIDGE) TO
- L- STA. 18+19.20 +/- (END BRIDGE)



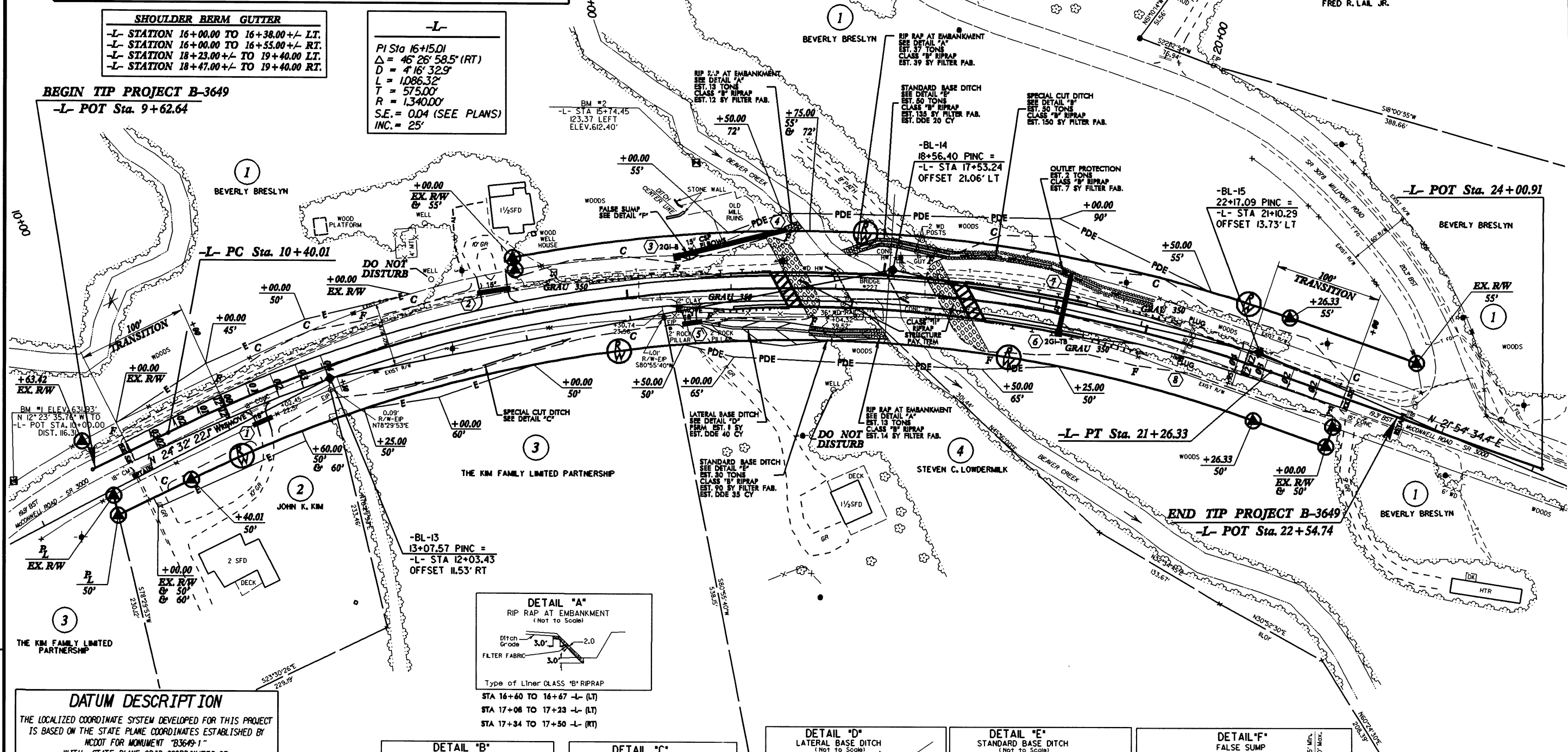
SHOULDER BERM GUTTER

-L STATION 16+00.00 TO 16+38.00 +/- LT.
 -L STATION 16+00.00 TO 16+55.00 +/- RT.
 -L STATION 18+23.00 +/- TO 19+40.00 LT.
 -L STATION 18+47.00 +/- TO 19+40.00 RT.

-L-

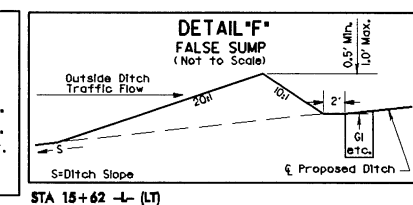
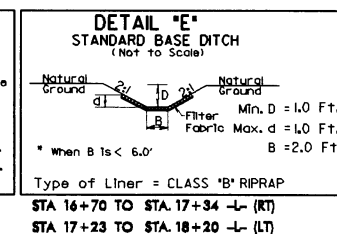
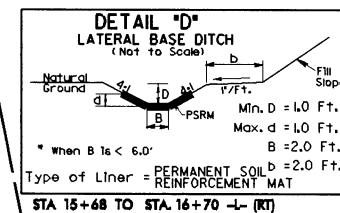
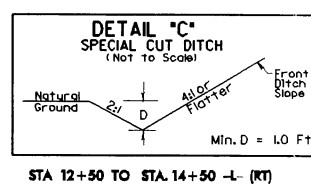
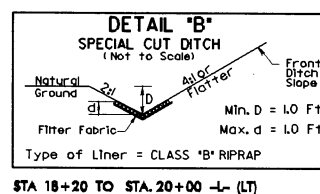
PI Sta 16+15.01
 $\Delta = 46^\circ 26' 58.5''$ (RT)
 $D = 416' 32.9''$
 $L = 1,086.32'$
 $T = 575.00'$
 $R = 1,340.00'$
 $S.E. = 0.04$ (SEE PLANS)
 $INC. = 25'$

BEGIN TIP PROJECT B-3649
-L- POT Sta. 9+62.64



DATUM	DESCRIPTION
1	10/1/1950
2	10/1/1950
3	10/1/1950
4	10/1/1950
5	10/1/1950
6	10/1/1950
7	10/1/1950
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96	10/1/1950
97	10/1/1950
98	10/1/1950
99	10/1/1950
100	10/1/1950

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
MCDOT FOR MONUMENT "B3649-1"
WITH STATE PLANE GRID COORDINATES OF
NORTHING: 836228.9673(11) EASTING: 1803370.3303(11)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999941580
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"B3649-1" TO I-1 STATION 10+00.00
S 3° 32' 02.22" W 2607.859 (11)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88



**FOR -L- PROFILE
SEE SHEET 5**

**FOR STRUCTURE PLANS
SEE SHEETS S-1 THRU S-?**

-L-

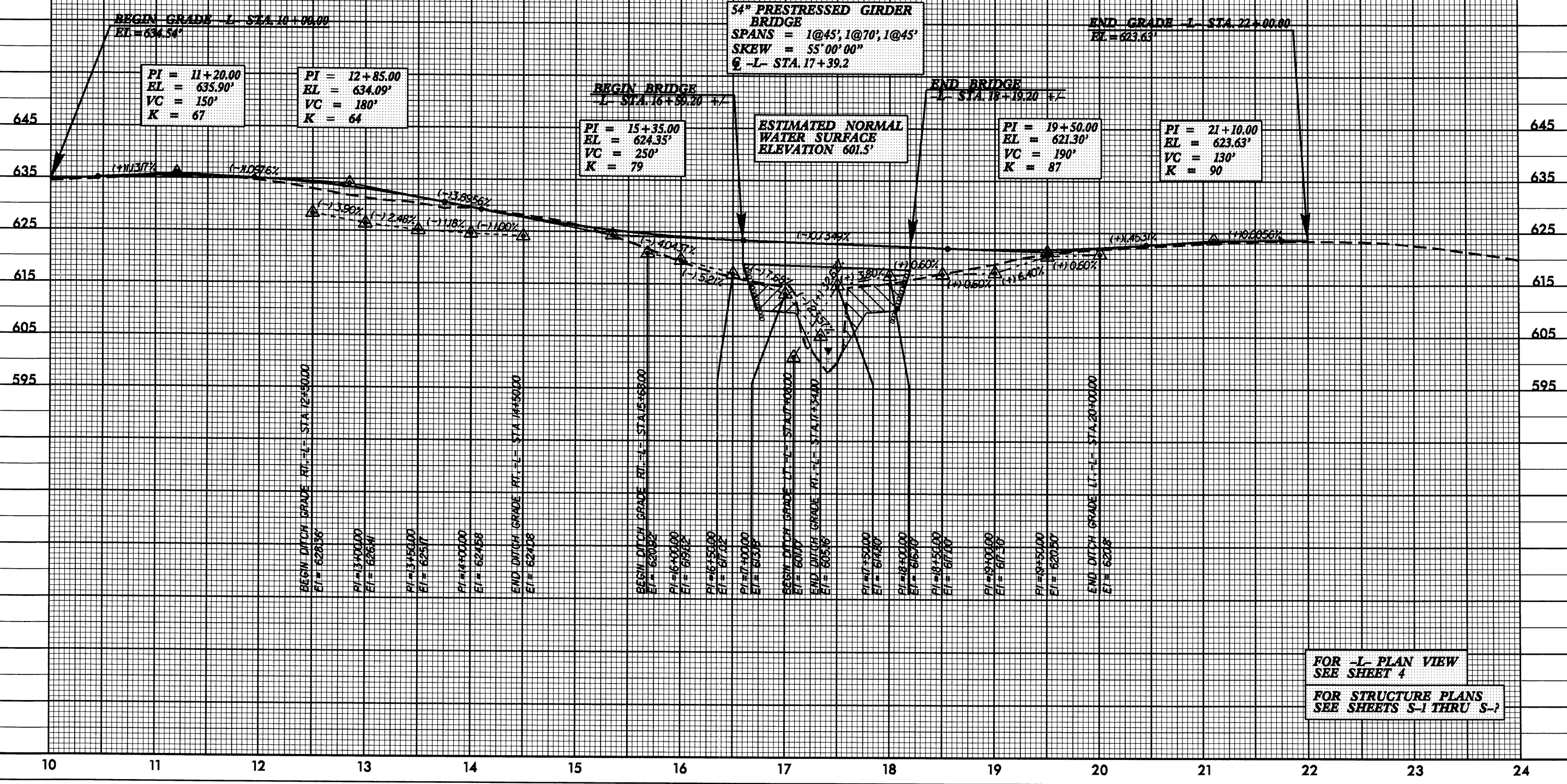
PROJECT REFERENCE NO.		SHEET NO.
B-3649		5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	

STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 2950 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 609.1 FT
BASE DISCHARGE	= 3900 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 610.2 FT
OVERTOPPING DISCHARGE	= 27500 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 621.8 FT

BM# 1 -L- STA. 10+00.00 TO RAILROAD SPIKE SET IN 17" GUM TREE IS S 12° 23' 35.76" E DISTANCE 116.31' ELEV.=631.93' N 833512 E 1803235

BM# 2 RAILROAD SPIKE SET IN 13" POPLAR TREE 123.37' LT. OF -L- STA. 15+74.45 ELEV. 612.40' N 834176 E 1802949

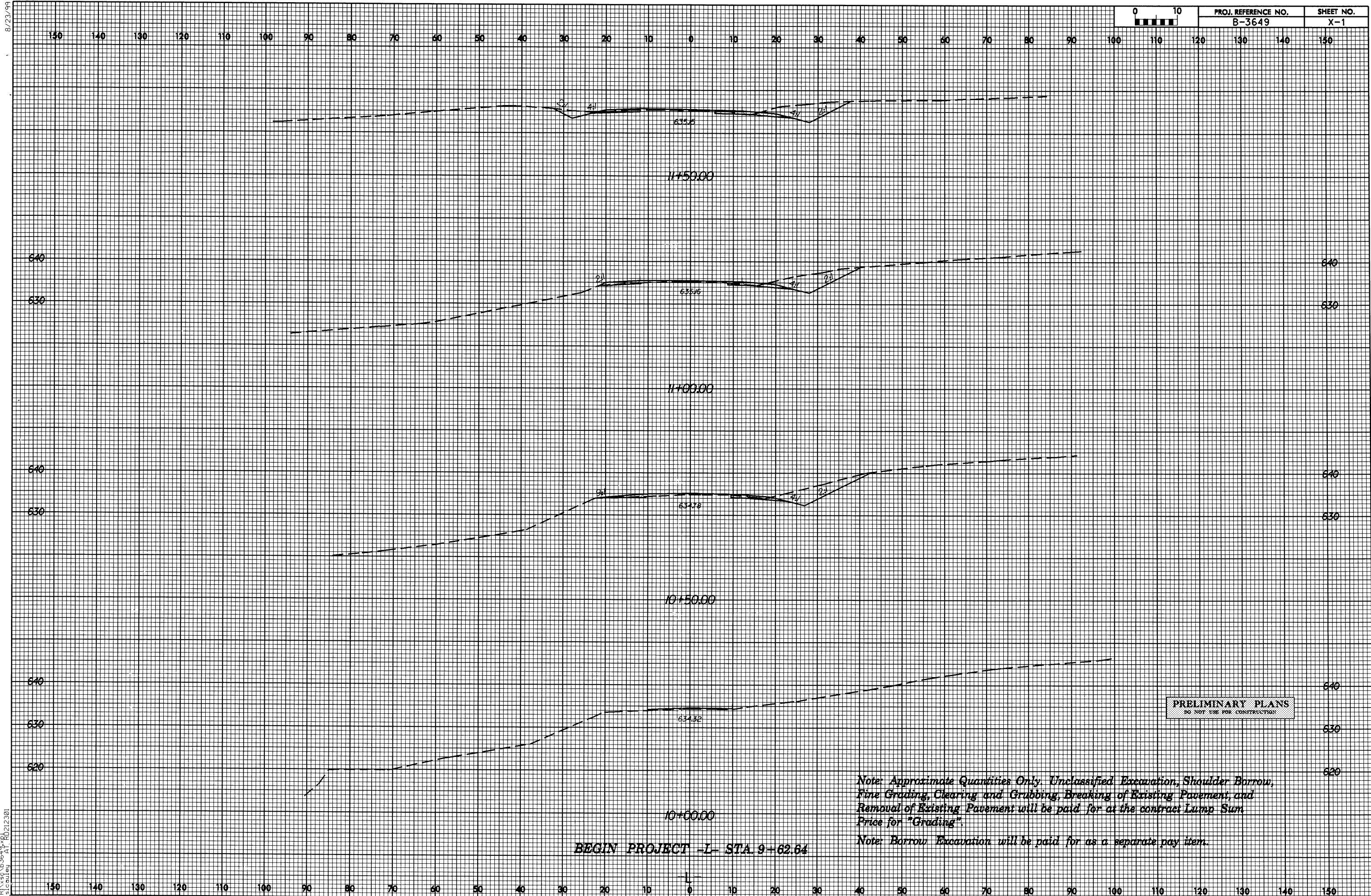


FOR -L- PLAN VIEW
SEE SHEET 4

FOR STRUCTURE PLANS
SEE SHEETS S-1 THRU S-7

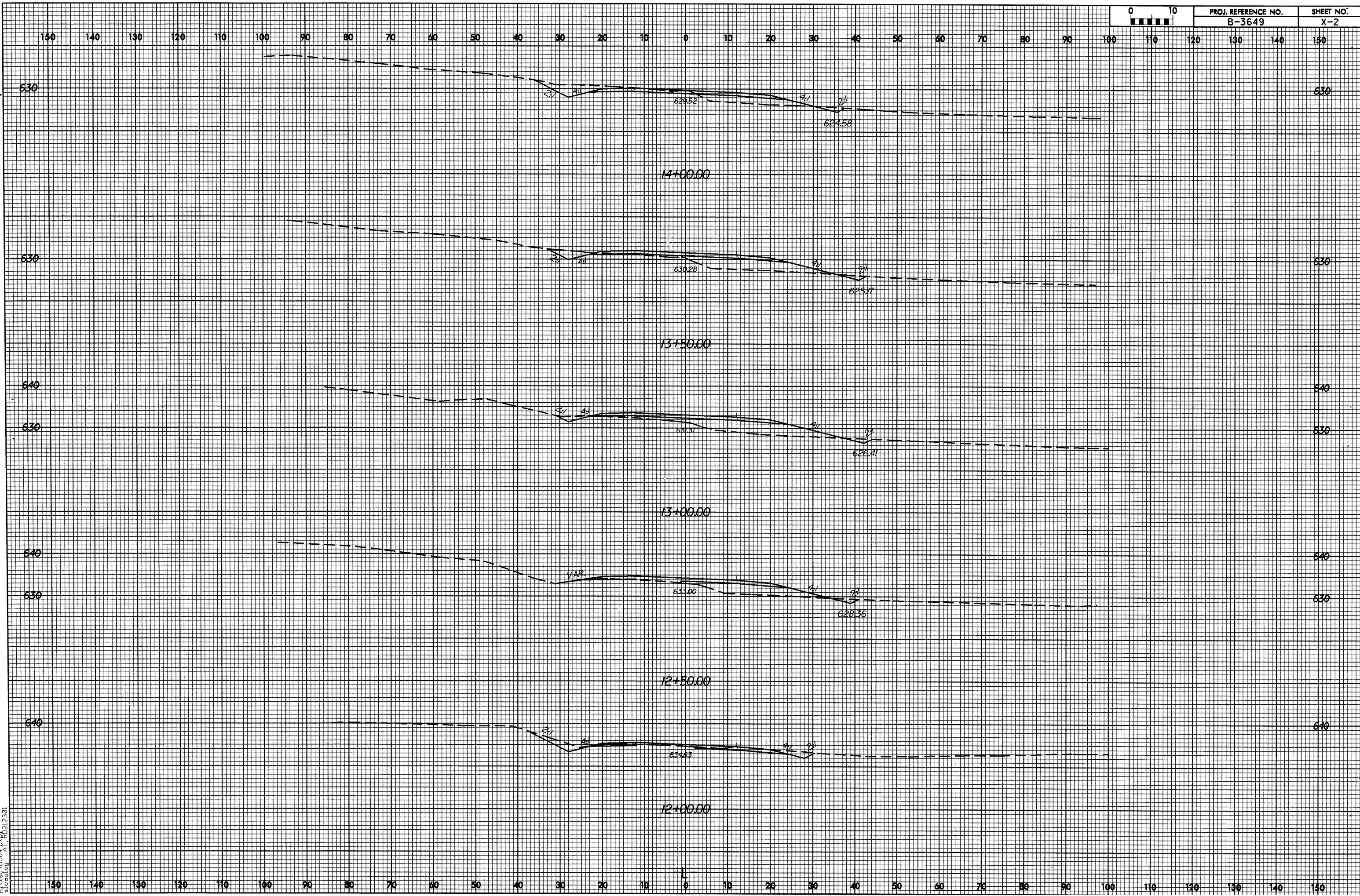
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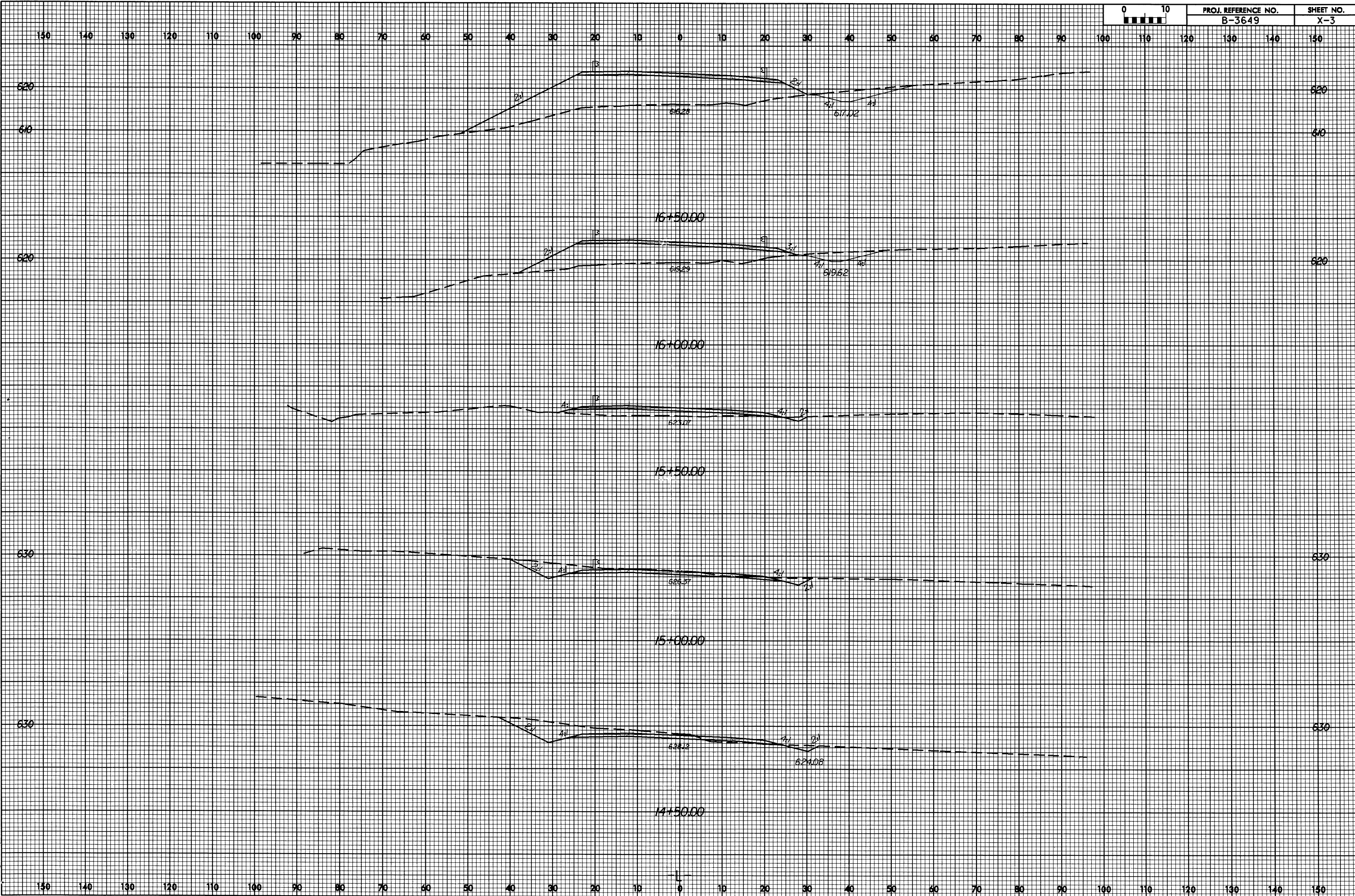
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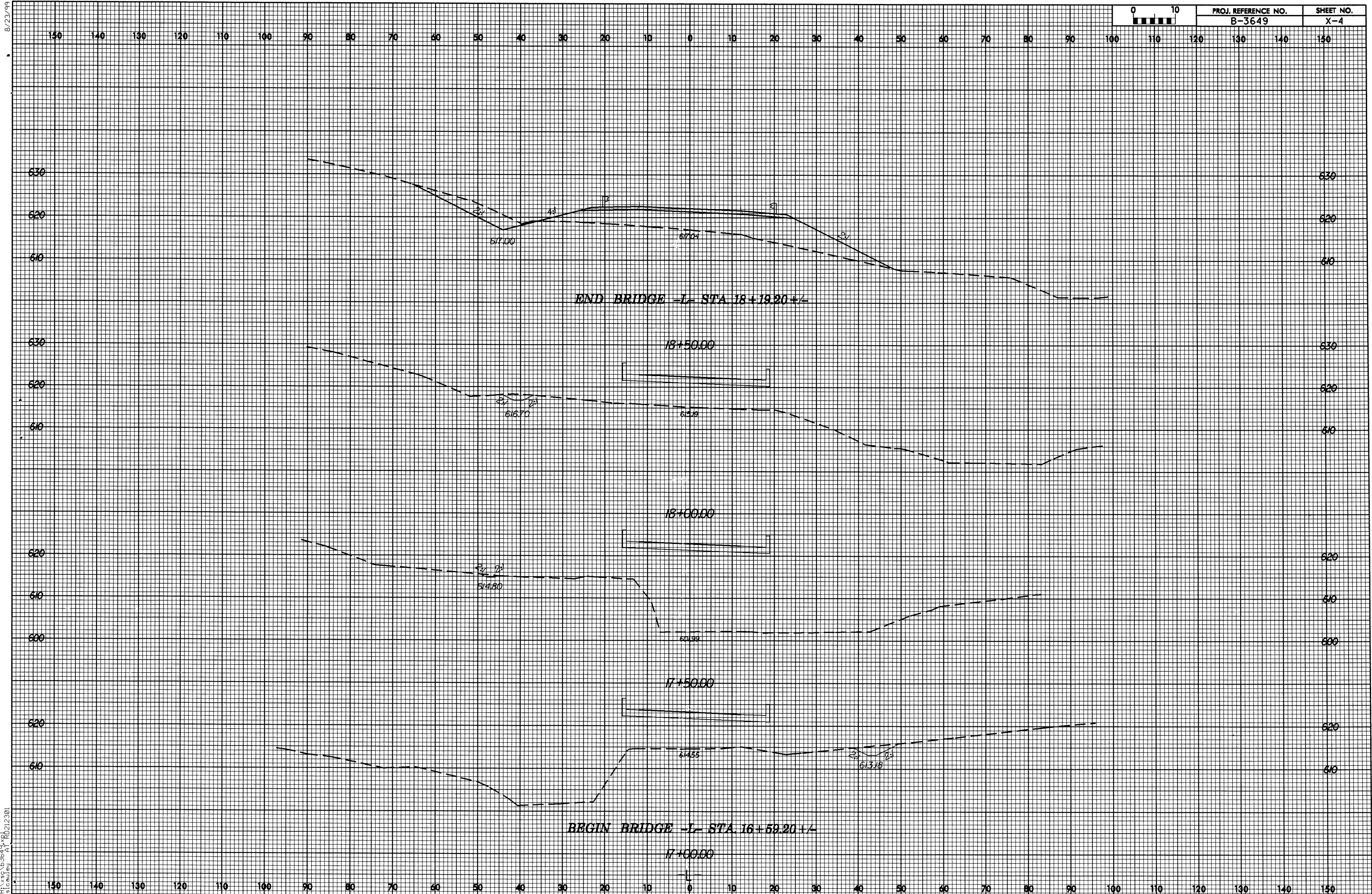
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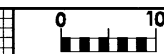
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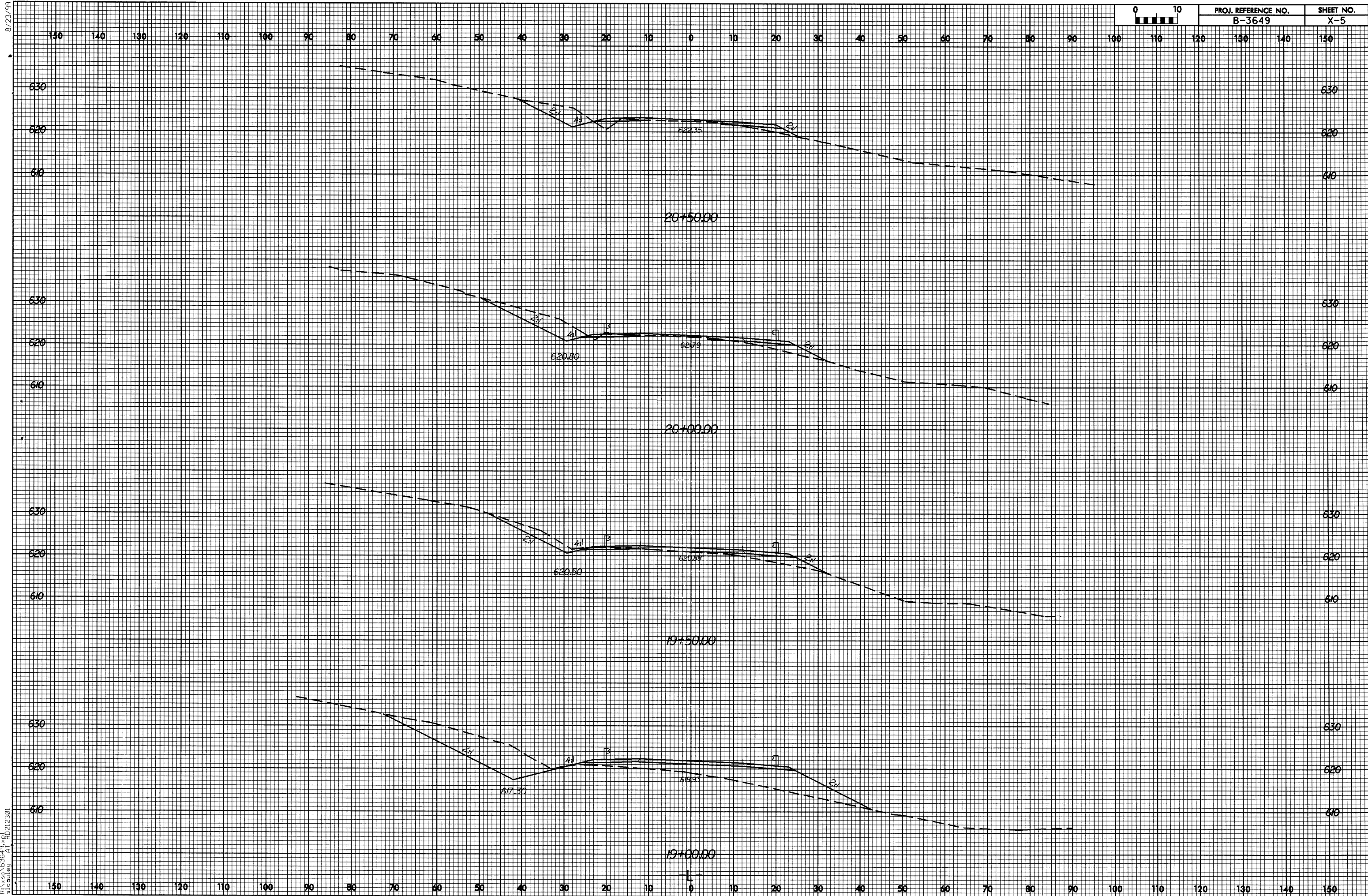
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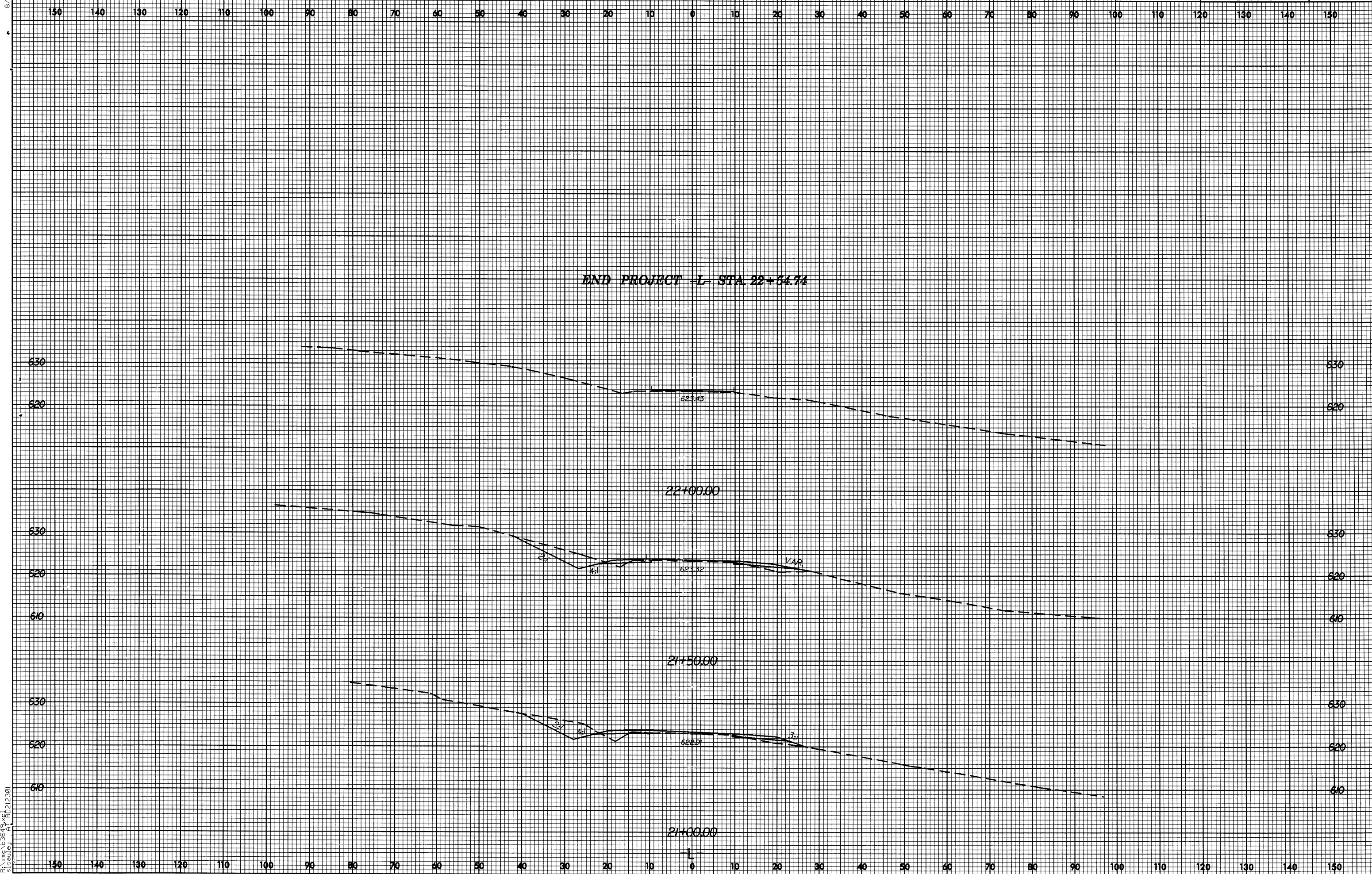


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PROJ. REFERENCE NO.	SHEET NO.
B-3649	X-6



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**Guilford County
Bridge No. 227 on SR 3000 (McConnell Rd.)
over Little Alamance Creek
Federal Aid Project No. BRZ-3000(2)
State Project No. 8.2495501
T.I.P. No. B-3649**

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

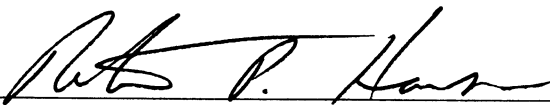
AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION


DIVISION OF HIGHWAYS

APPROVED:

7/30/02
DATE


Robert P. Hanson, PE, Assistant Manager
Project Development and Environmental Analysis Branch, NCDOT

7/30/02
DATE

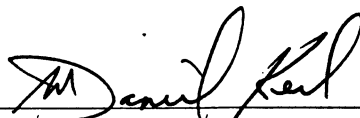
for 
Nicholas L. Graf, PE
Division Administrator, FHWA

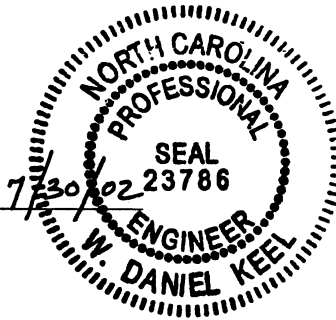
**Guilford County
Bridge No. 227 on SR 3000 (McConnell Rd.)
over Little Alamance Creek
Federal Aid Project No. BRZ-3000(2)
State Project No. 8.2495501
T.I.P. No. B-3649**


CATEGORICAL EXCLUSION

July 2002

Document Prepared by:


Daniel Keel, PE
Project Development Engineer




Linwood Stone, CPM
Project Development Engineer, Unit Head

**Guilford County
Bridge No. 227 on SR 3000 (McConnell Rd.)
over Little Alamance Creek
Federal Aid Project No. BRZ-3000(2)
State Project No. 8.2495501
T.I.P. No. B-3649**

PROJECT COMMITMENTS

Division 7, Resident Engineer's office

At least a two-week notice will be given to the Guilford County School Bus Transportation Coordinator prior to road closure.

Guilford County
Bridge No. 227 on SR 3000 (McConnell Rd.)
over Little Alamance Creek
Federal Aid Project No. BRZ-3000(2)
State Project No. 8.2495501
T.I.P. No. B-3649

INTRODUCTION: Bridge No. 227 is included in the 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program for right of way acquisition in fiscal year (FY) 2003 and construction in FY 2004. The location is shown in Figure 1. No significant environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 36.1 out of a possible 100 for a new structure. The bridge is considered to be structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located in Guilford County, southeast of Greensboro approximately 0.4 miles (0.64 km) north of the intersection of SR 3000 (McConnell Rd.) and SR 3219 (Keesee Rd.) (see Figure 1 for map showing location). Land use in this area is rural with scattered residential development.

SR 3000 (McConnell Rd.) is classified as rural local route in the Statewide Functional Classification System and as a Federal-Aid Highway. This section of SR 3000 is not included in the TIP as needing incidental bicycle and pedestrian accommodations.

In the vicinity of the bridge, SR 3000 (McConnell Rd.) is a two-lane roadway with a 19-foot (5.7 meter) pavement width and grassed shoulders. The roadway grade is in a sag vertical curve through the project area.

Bridge No. 227 is a two-span structure that consists of a timber deck on steel I-beams. The abutments consist of timber caps, piles, and bulkheads. The interior pier consists of concrete about three feet wide. The existing bridge was constructed in 1952. The overall length of the structure is 49 feet (14.7 meters). The clear roadway width is 23.0 feet (6.9 meters), which provides for two through lanes. The posted weight limit on this bridge is 14 tons (12,700 kg) for single vehicles and 18 tons (16,329 kg) for TTST's.

There are no utilities attached to the existing structure, but there are overhead power, CATV, and telephone lines located just west of the bridge. There is also an underground telephone line along the west side of SR 3000 (McConnell Rd.), and aerial service across Little Alamance Creek.

Utility impacts are anticipated to be minimal. The current traffic volume of 1,400 vehicles per day (VPD) is expected to increase to 2,700 VPD by the year 2025. The projected volume includes 1 percent truck-tractor semi-trailer (TTST) and 4 percent dual-tired vehicles (DT). The posted speed limit is 45 miles per hour (63 km/h) in the project area.

No accidents have been reported in the vicinity of Bridge No. 227 during the period from January 1997 to December 2000.

Six school buses cross Bridge No. 227 daily on their morning and afternoon routes for a total of 12 runs. The detour will have a minor impact on eight of the runs, causing little or no time/mileage increase. The remaining four runs, two in the morning and two in the evening, use SR 3000 (McConnell Rd.) as an access to bus stops in the surrounding area. These stops will require adjustments including bus turnaround locations, travel path adjustments and possibly moving bus stop locations. The Guilford County School Bus Transportation Coordinator has indicated that maintaining traffic on-site is preferred, but an off-site detour is acceptable. He requests at least a two-week notice prior to road closure to accommodate the required adjustments.

III. ALTERNATIVES

A. Project Description

The recommended replacement structure will be a four barrel 12-foot (3.6 meter) wide by 11-foot (3.3 meter) high reinforced concrete box culvert. This structure will be of sufficient length to provide two 12-foot (3.6 meter) lanes with a 8-foot (2.4 meter) shoulder using guardrail on each side across the creek.

The roadway grade of the new structure will be approximately the same as the grade of the existing bridge. The design speed for the roadway will be 50 miles per hour (80 km/h).

SR 3000 (McConnell Rd.) will be widened to a 24-foot (3.6 meter) pavement width to provide two 12-foot (3.6 meter) lanes and an 8-foot (2.4 meter) shoulder on each side. Improvements to the approach roadways will be required for a distance of approximately 275 feet (82.5 meters) to the north and 450 feet (135 meters) to the south of the structure. The typical section of the proposed roadway is included as Figure 3.

B. Reasonable and Feasible Alternatives

Two reasonable and feasible alternatives for replacing Bridge No. 227 were considered.

Alternative 1 (preferred) involves replacing Bridge No. 227 along the existing roadway alignment with a four-barrel 12-foot (3.6 meter) (width) by 11-foot (3.3 meter) (height) reinforced concrete box culvert. Traffic will be detoured off-site along portions of SR 3000 (McConnell Rd.), SR 3045 (Mt. Hope Church Rd.), and SR 3143 (Millstream Rd.) during construction. See Figure 1 for studied detour route. The detour route is 2.9 miles (4.6 km). This is also the preferred alternate of the Division 7 construction office.

Alternative 2 involves replacing Bridge No. 227 along the existing roadway alignment. A temporary on-site detour will be provided during the construction period west (upstream) of the existing structure. The temporary detour will require two 117-inch (297 cm) (span) by 79-inch (201 cm) (rise) corrugated steel pipe arches with a road grade approximately the same as the existing bridge. Alternative 2 is not recommended because it is more economical to detour traffic off-site than to maintain traffic on-site. The detour will have a daily user cost of \$691.03 for approximately 9 months for a total of \$186,578 which is considerably less than the \$250,000 in additional construction costs incurred with Alternative 2; additional right of way costs would also be incurred with Alternative 2. Detouring traffic offsite also reduces impacts on the environment by reducing construction scope and duration.

C. Alternatives Eliminated From Further Study

The “do-nothing” alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by SR 3000.

“Rehabilitation” of the old bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternative

Alternative 1, replacing the existing bridge with a culvert on the existing alignment with an off-site detour is the preferred alternate. Alternative 1 was selected because it replaces Bridge No. 227 by the most economical and least environmentally damaging method.

The Guilford County School Transportation Director and The Guilford County Emergency Services Deputy Director indicated that detouring traffic off-site during the construction period is acceptable if the requested advanced notice is provided.

IV. ESTIMATED COSTS

The estimated costs for the two alternatives are as follows:

	Alternative 1	Alternative 2
Structure	\$310,590	\$310,590
Roadway Approaches	\$105,768	\$172,768
Detour Structure & Approaches	0	\$148,000
Structure Removal	\$13,642	\$13,642
Eng. & Contingencies	\$70,000	\$105,000
Total Construction Cost	\$500,000	\$750,000
Right of way Costs	\$14,000	\$14,000
Total Project Cost	\$514,000	\$764,000

The estimated cost of the project shown in the 2004-2010 Draft NCDOT Transportation Improvement Program is \$475,000, including \$90,000 spent in prior years, \$35,000 for right of way, and \$350,000 for construction.

V. NATURAL RESOURCES

A. METHODOLOGY

Research was conducted prior to field investigations. Published resource information pertaining to the project area was gathered and reviewed. Resources used in this preliminary investigation of the project area include:

- Geological Survey (USGS) quadrangle maps (McCleansville).
- NCDOT aerial photographs of the project area (1:100).
- USDA Soil Conservation Service, currently known as Natural Resource Conservation Service, Soil Survey of Guilford County, North Carolina (1977).
- NC Center for Geographic Information and Analysis Environmental Sensitivity Base Maps of Guilford County (1995).

Water resource information was obtained from publications of the Department of Environment, Health and Natural Resources (DEHNR, 1993). Information concerning the occurrence of federal and state protected species in the study area was obtained from the US Fish and Wildlife Service list of protected and candidate species (February 26, 2001) and from the N.C. Natural Heritage Program (NCNCNHP) database of rare species and unique habitats. NCNHP files were reviewed for documented occurrences of state or federally listed species and locations of significant natural areas.

NCDOT Environmental Biologists conducted general field surveys in the proposed project area on March 14, 2001. Water resources were identified and their physical characteristics were recorded. Plant communities and their associated wildlife were also identified and described. Terrestrial community classifications generally follow Schafale and Weakley (1990) where possible, and plant taxonomy follows Radford, *et al.* (1968). Animal taxonomy follows Martof, *et al.* (1980), Menhenick (1991), Potter, *et al.* (1980), and Webster, *et al.* (1985). Vegetative communities were mapped utilizing aerial photography of the project site. Predictions regarding wildlife community composition involved general qualitative habitat assessment based on existing vegetative communities. Wildlife identification involved using a variety of observation techniques: qualitative habitat assessment based on vegetative communities, active searching, identifying characteristic signs of wildlife (sounds, scat, tracks and burrows). Cursory surveys of aquatic organisms were conducted and tactile searches for benthic organisms were administered as well. Organisms captured during these searches were identified and then released.

Jurisdictional wetlands, if present, were identified and evaluated based on criteria established in the "Corps of Engineers Wetland Delineation Manual" (Environment Laboratory, 1987) and "Guidance for Rating the Values of Wetlands in North Carolina" (Division of Environmental Management, 1995). Wetlands were classified based on the classification scheme of Cowardin, *et al.* (1979).

B. PHYSIOGRAPHY AND SOILS

Soil and water resources that occur in the project area are discussed below with respect to possible environmental concerns. Soil properties and site topography significantly influence the potential for soil erosion and compaction, along with other possible construction limitations or management concerns. Water resources within the project area present important management limitations due to the need to regulate water movement and the increased potential for water quality degradation. Excessive soil disturbance resulting from construction activities can potentially alter both

the flow and quality of water resources, limiting downstream uses. In addition, soil characteristics and the availability of water directly influence the composition and distribution of flora and fauna in biotic communities, thus affecting the characteristics of these resources.

Guilford County lies within the piedmont physiographic region of north-central North Carolina. The county is generally rolling with moderately steep slopes along the drainageways. Dominant soils include mostly sandy clay loams. Little Alamance Creek elevation in the project area is approximately 600 feet. The county is drained by tributaries of the Haw River to the east and the Deep River to the south.

The southeastern half of Guilford County is primarily underlain with soils in the Enon-Mecklenburg Association. This association is comprised of well-drained, sandy clay loam, clay loam, and loamy soils that have a clayey subsoil. There are three soil types located in the project area. A brief description of each soil type is provided.

- Wilkes sandy loam, 15 to 45 percent slopes (WkE) is a well drained soil located on side slopes adjacent to major drainageways. In the project area, this soil is found bordering both sides of Little Alamance Creek. Typically, the surface layer is a 7-inch thick dark brown sandy loam, underlain by sandy loam and clay loam horizons. Depth to bedrock is 40 to 80 inches. This soil has a slow surface runoff. Permeability is moderately slow and the shrink-swell potential is moderate. The seasonal high water table is more than 6 feet deep.
- Mecklenburg sandy clay loam, 6 to 10 percent slopes, (MhC2) is a well drained soil on long narrow side slopes on uplands. In the vicinity of the project, this soil is found north of the Wilkes loam. Typically, the surface layer sandy clay loam about 7 inches thick underlain with silty clay loam. Depth to bedrock is 48 to 60 inches. Permeability is slow and reaction of the subsoil is medium acid. The seasonal high water table is more than 6 feet.
- Enon fine sandy loam, 6 to 10 percent slopes (EnC) is a well drained soil on long narrow side slopes on uplands. This loam is found south of the Wilkes loam on the upper slopes. Typically, the surface layer is dark grayish brown fine sandy loam about 3 inches thick, underlain by fine sandy loam, clay loam, and clay layers. Depth to bedrock is more than 5 feet. The organic matter content of the surface layer is low. Permeability is slow and the shrink-swell potential is high. The seasonal high water table is at a depth of 1 to 2 feet.

C. WATER RESOURCES

This section contains information concerning surface water resources likely to be impacted by the proposed project. Water resource assessments include the physical characteristics, best usage standards, and water quality aspects of the water resources, along with their relationship to major regional drainage systems. Probable impacts to surface water resources are also discussed, as are means to minimize impacts.

Water resources within the study area are located in the Upper Cape Fear River Drainage Basin, Subbasin 03-06-03, and Hydrologic Unit 03030002 of the Cape Fear River Drainage Basin. The Cape Fear River Basin is the largest river basin in the state, covering 9,324 square miles of land and water (NCDENR 1998). Little Alamance Creek is the only water resource in the project study area.

1. Best Usage Classification

Streams have been assigned a best usage classification by the Division of Water Quality (DWQ) which reflects water quality conditions and potential resource usage. Unnamed tributaries receive the same classification as the streams to which they flow. The classification for Little Alamance Creek [DEM Index No. 16-19-3-(4), 8/3/92] is **WS-IV NSW**. Waters classified as **WS-IV** waters are used as sources of water supply for drinking, culinary, or food processing purposes for those users where a more stringent classification is not feasible. **WS-IV** waters are generally in moderately to highly developed watersheds or Protected Areas. **NSW** waters are nutrient sensitive waters and receive this supplemental classification because they are in need of additional nutrient management due to excessive growth of microscopic or macroscopic vegetation. In general, management strategies for point and nonpoint source pollution control require there be no increase in nutrients over background levels.

No waters classified as High Quality Waters (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occur within 1.6 km (1.0 mi) of the project study area.

2. Physical Characteristics of Surface Waters

Little Alamance Creek in the vicinity of SR 3000 is approximately 20 to 30 feet wide (6 to 9 meters) and ranges in depth from 2 to 4 feet (0.6 to 1.2 meters). Immediately underneath the existing bridge, the creek is slightly wider, 30 to 40 feet (9 to 12 meters). Streambed substrate consists of sand, gravel, cobbles, and boulders and there is a well-defined bed and bank. On the day of the site visit, flow was moderate and water clarity was good.

3. Water Quality

This section describes the quality of the water resources within the project area. Potential sediment loads and toxin concentrations of these waters from both point sources and nonpoint sources are evaluated. Water quality assessments are made based on published resource information and existing general watershed characteristics. These data provide insight into the value of water resources within the project area to meet human needs and to provide habitat for aquatic organisms.

There is one registered point source discharger located about 4.5 miles upstream from the project study area on an unnamed tributary to Little Alamance Creek. The Forest Oaks Country Club received license No. NC0084841 on August 11, 1995.

4. Benthic Macroinvertebrate Ambient Network

The Basinwide Monitoring Program, managed by the DWQ, is part of an ongoing ambient water quality-monitoring program that addresses long-term trends in water quality. The program monitors ambient water quality by sampling at fixed sites for selected benthic macroinvertebrates organisms, which are sensitive to water quality conditions. Samples are evaluated on the number of taxa present of intolerant groups [Ephemeroptera, Plecoptera, Trichoptera (EPT)] and a taxa richness value (EPT S) is calculated. A biotic index value is also calculated for the sample that summarizes tolerance data for all species in each collection. The two rankings are given equal weight in final site classification. The biotic index and taxa richness values primarily reflect the influence of chemical pollutants. The major physical pollutant, sediment, is poorly assessed by a taxa richness analysis. Different criteria have been developed for different ecoregions (mountains, piedmont, and coastal plain) within North Carolina. **There are no benthic monitoring stations on Little Alamance Creek in or above the project area.**

5. Summary of Anticipated Impacts to Water Resources

Impacts to water resources in the project area are likely to result from activities associated with project construction. Activities likely to result in impacts are clearing and grubbing on streambanks, riparian canopy removal, instream construction, fertilizers and pesticides used in revegetation, and pavement installation. The following impacts to surface water resources are likely to result from the above mentioned construction activities.

- Increased sedimentation and siltation downstream of the crossing and increased erosion in the project area.
- Alteration of stream discharge due to silt loading and changes in surface and groundwater drainage patterns.
- Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
- Changes in and destabilization of water temperature due to vegetation removal.
- Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
- Increased nutrient loading during construction via runoff from exposed areas.
- Increased concentrations of toxic compounds in roadway runoff.
- Increased potential for release of toxic compounds such as fuel and oil from construction equipment and other vehicles.

In order to minimize potential impacts to water resources in the project area, NCDOT's Best Management Practices for the Protection of Surface Waters will be strictly enforced during the construction phase of the project. Limiting instream activities and revegetating stream banks immediately following the completion of grading will further reduce impacts.

D. BIOTIC RESOURCES

Biotic resources include terrestrial and aquatic communities. This section describes the biotic communities encountered in the project area, as well as the relationships between fauna and flora within these communities. The composition and distribution of biotic communities throughout the project area are reflective of topography, soils, hydrology, and past and present land uses. Descriptions of the terrestrial systems are presented in the context of plant community classifications. These classifications follow Schafale and Weakley (1990) where possible. Representative animal species that are likely to occur in these habitats (based on published range distributions) are also cited.

Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Subsequent references to the same organism refer to the common name only. Fauna observed during the site visit are denoted in the text with an asterisk (*).

1. Biotic Communities

Biotic communities include terrestrial and aquatic elements. Much of the flora and fauna described from biotic communities use resources from different communities, making boundaries between contiguous communities difficult to define. There are two terrestrial communities located in the project area. These communities are discussed below.

2. Maintained Roadside Community

This community is located on both sides of SR 3000 and will be impacted by the bridge replacement. Because of mowing and the use of herbicides, this community is kept in a constant state of early succession. The dominant species in this community are fescue (*Festuca* sp.), English plantain (*Plantago lanceolata*), red clover (*Trifolium pratense*), wild onion (*Allium canadense*), and Japanese honeysuckle (*Lonicera japonica*).

3. Bottomland Hardwood Community

The bottomland hardwood community is composed of species such as yellow poplar (*Liriodendron tulipifera*), sycamore (*Platanus occidentalis*), sweetgum (*Liquidambar styraciflua*), flowering dogwood (*Cornus florida*), sumac (*Rhus glabra*), Chinese privet (*Ligustrum* sp.), Japanese honeysuckle, poison ivy (*Rhus radicans*), and muscadine vine (*Vitis rotundifolia*).

4. Aquatic Community

This community is contained in Little Alamance Creek, a perennial stream. Aquatic insects found in this type of community include the water strider (*Gerris* spp.), crane fly (*Tipula* spp.), stream mayfly* (Ephemeroptera), netmaking caddisfly (Hydropsychae) and black-winged damselfly (*Calopteryx maculata*).

5. Wildlife

Maintained/disturbed communities adjacent to forested tracts provide rich ecotones for foraging, while the forests provide forage and cover. Common mammals and birds associated with this type of habitat are woodchuck (*Marmota monax*), least shrew (*Cryptotis parva*), southern short-tailed shrew (*Blarina carolinensis*), hispid cottonrat (*Sigmodon hispidus*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon* (*Procyon lotor*), opossum (*Didelphis virginiana*), ruby-crowned kinglet (*Regulus calendula*), Carolina chickadee* (*Parus carolinensis*), downy woodpecker (*Picoides pubescens*), cardinal* (*Cardinalis cardinalis*), common grackle (*Quiscalus quiscula*) and white-breasted nuthatch (*Sitta carolinensis*).

6. Summary of Anticipated Impacts to Biotic Resources

Construction of the proposed project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies potential impacts to the natural communities within the project area in terms of the area impacted and the organisms affected. Temporary and permanent impacts are considered here as well, along with recommendations to minimize or eliminate impacts.

7. Terrestrial Impacts

Impacts to terrestrial communities will result from project construction. Loss of the bottomland hardwood community will result from conversion of this community to maintained community in order to accommodate the increased right of way width. Table 1 summarizes potential losses to these communities, resulting from project construction. Calculated impacts to terrestrial communities reflect the relative abundance of each community present in the study area. Estimated impacts are derived based on the project lengths described in Section 1.1, and the entire proposed right-of-way width of 80

feet for the bridge replacement. However, project construction often does not require the entire right of way; therefore, actual impacts may be considerably less.

Table 1. Estimated area impacts to terrestrial communities.

Community	Impacted Area
Maintained Roadside	0.2 ac (0.1 ha)
Bottomland Hardwood	0.2 ac (0.1 ha)
Total Impacts	0.4 ac (0.2 ha)

8. Aquatic Impacts

Impacts to the aquatic community of Little Alamance Creek will result from the replacement of Bridge No. 227. Impacts are likely to result from the physical disturbance of aquatic habitats (i.e. substrate and water quality). Disturbance of aquatic habitats has a detrimental effect on aquatic community composition by reducing species diversity and the overall quality of aquatic habitats. Physical alterations to aquatic habitats can result in the following impacts to aquatic communities.

- Inhibition of plant growth.
- Algal blooms resulting from increased nutrient concentrations.
- Loss of benthic macroinvertebrates through scouring resulting from an increased sediment load.

NCDOT's strict adherence to BMP's will minimize impacts to aquatic communities. Installing culverts below the grade of the streambed will also allow the stream to fill in with a natural substrate, emulating the existing benthic habitat.

E. JURISDICTIONAL TOPICS

This section provides inventories and impact analyses pertinent to two significant regulatory issues: Waters of the United States and rare and protected species. These issues retain particular significance because of federal and state mandates that regulate their protection. This section deals specifically with the impact analyses required to satisfy regulatory authority prior to project construction.

1. Waters of the United States

Surface waters and wetlands fall under the broad category of "Waters of the United States" (Waters of the U.S.), as defined in Section 33 of the Code of Federal Register (CRF) Part 328.3. Any action that proposes to dredge or place fill material into surface waters or wetlands falls under the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (33 U.S.C. 1344). Surface waters include all standing or flowing waters which have commercial or recreational value to the public. Wetlands are identified based on the presence of hydric soils, hydrophytic vegetation, and saturated or flooded conditions during all or part of the growing season.

2. Characteristics of Wetlands and Surface Waters

Criteria to delineate jurisdictional wetlands include evidence of hydric soils, hydrophytic vegetation, and hydrology. **There are no wetlands in the project area.**

Impacts to jurisdictional surface waters are calculated based on the linear feet of the stream that are located within the proposed right of way. A length of 80 feet (24 meters) of Little Alamance Creek and 0.06 ac (0.02 ha) of streambed may be impacted by the proposed bridge replacement. Physical aspects of surface waters are described in Section 2.3.2.

3. Permits

Impacts to jurisdictional surface waters are anticipated from the proposed project. As a result, construction activities will require permits and certifications from various regulatory agencies in charge of protecting the water quality of public water resources

A Nationwide Permit 33 CFR 330.5(a) (23) is likely to be applicable for all impacts to Waters of the U.S. resulting from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed in whole, or part, by another Federal agency or department where that agency or department has determined, (pursuant to the council on environmental quality regulation for implementing the procedural provisions of the National Environmental Policy Act), that:

- (1) The activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and;
- (2) The office of the Chief of Engineers has been furnished notice of the agency' or department's application for the categorical exclusion and concurs with that determination.

Section 401 of the Clean Water Act requires that the state issue or deny water certification for any federally permitted or licensed activity that may result in a discharge to Waters of the U.S. Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulation. However, since this project will result in less than 0.1 acre of surface water impacts, a 401 Water Quality Certification is not required from the DWQ.

4. Bridge Demolition

Bridge No. 227, built by NCDOT in 1952, carries SR 3000 over Little Alamance Creek in Guilford County. The bridge is 49 feet (15 meters) long and 24 feet (7 meters) wide. The superstructure consists of a timber deck on steel I-beams. The substructure is composed of a masonry vertical abutment on one end and a timber cap and pile vertical abutment on the other with a masonry pier in the middle. Removal of the superstructure and the substructure will not create any temporary fill into Waters of the U.S. Although removal of the substructure may create some disturbance in the streambed, conditions in the stream will not raise sediment concerns, therefore a turbidity curtain is not recommended.

5. Avoidance, Minimization, Mitigation

The USACE has adopted through the Council on Environmental Quality (CEQ) a wetland mitigation policy which embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological and physical integrity of Waters of the U.S., specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization and compensatory mitigation) must be considered sequentially.

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to Waters of the U.S. According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the USACE, in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology and logistics in light of overall project purposes. Avoidance of impacts results by the implementation of an offsite detour, preventing impacts from a temporary detour.

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the U.S.. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction to median widths, right-of-way widths, fill slopes and/or road shoulder widths. In order to minimize impacts from the replacement of bridge No. 227, steeper slopes and guardrails will be utilized to lessen the footprint of the project.

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the U.S. have been avoided and minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation and enhancement of Waters of the U.S., specifically wetlands. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site.

Projects authorized under Nationwide Permits that result in the fill or alteration of:

- More than 0.1 acre (0.04 ha) may require compensatory mitigation,
- At least 1.0 acre (0.40 ha) of wetlands will require compensatory mitigation, and/or
- At least 150 linear feet (45.7 meters) of streams will require compensatory mitigation.

The impacts from this project do not meet the minimum mitigation threshold. **Therefore, no mitigation requirement is anticipated.** However, final permit/mitigation decisions rest with the USACE.

F. RARE AND PROTECTED SPECIES

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to exist with human development. Federal law (under the provisions of the Endangered Species Act of 1973, as amended) requires that any action, likely to adversely affect a species classified as federally-protected, be subject to review by the United States Fish and Wildlife Service (USFWS). Other species may receive additional protection under separate state laws.

1. Federally-Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of February 26, 2001, the USFWS lists one federally protected species for Guilford County. The bald eagle (Haliaeetus leucocephalus) is currently listed as threatened (likely to become endangered in the foreseeable future throughout all or a significant portion of its range). However, this species

has been proposed for delisting due to it's population increase since the original listing in 1967. The following is a brief description of the characteristics and habitat requirements for this species.

Haliaeetus leucocephalus (bald eagle) Threatened

Animal Family: Accipitridae

Date Listed: 3/11/67

Distribution in N.C.: Anson, Beaufort, Brunswick, Carteret, Chatham, Chowan, Craven, Dare, Durham, Guilford, Hyde, Montgomery, New Hanover, Northhampton, Perquimans, Richmond, Stanley, Vance, Wake, Washington.

Adult bald eagles can be identified by their large white head and short white tail. The body plumage is dark-brown to chocolate-brown in color. In flight bald eagles can be identified by their flat wing soar.

Eagle nests are found in close proximity to water (within a half mile) with a clear flight path to the water, in the largest living tree in an area, and having an open view of the surrounding land. Human disturbance can cause an eagle to abandon otherwise suitable habitat. The breeding season for the bald eagle begins in December or January. Fish are the major food source for bald eagles. Other sources include coots, herons, and wounded ducks. Food may be live or carrion.

*This site was surveyed on March 14, 2001 by NCDOT and no suitable habitat was found. In addition, a March 9, 2001 review of the NCNHP database of rare species and unique habitats revealed no occurrence of federally protected species within one mile (1.6 km) the project study area. Therefore, a **Biological Conclusion of "No Effect"** has been issued for the bald eagle, i.e. there will be no impacts to these species during construction of the project.*

2. Federal Species of Concern and State Listed Species

There is one Federal Species of Concern (FSC) listed by the USFWS for Guilford County. Federal species of concern are not afforded federal protection under the Endangered Species Act of 1973, as amended, and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. However, the status of these species is subject to change, and so should be included for consideration. A FSC is defined as a species that is under consideration for listing for which there is insufficient information to support listing. In addition, organisms which are listed as Endangered (E), Threatened (T), or Special Concern (SC) by the North Carolina Natural Heritage Program list of Rare Plant and Animal Species are afforded state protection under the NC State Endangered Species Act and the NC Plant Protection and Conservation Act of 1979, as amended.

The only FSC listed for Guilford County is the Carolina darter (*Etheostoma collis lepidinon*). The NC status for this species is SC. This is a Special Concern species, which requires monitoring but may be taken or collected and sold under regulations adopted under the provisions of Article 25 of Chapter 113 of the General Statutes (animals) and the Plant Protection and Conservation Act (plants). Little Alamance Creek may provide suitable habitat for this darter. However, a March 9, 2001 review of the NCNHP database of rare species and unique habitats revealed no occurrence of FSC species within one mile (1.6 km) the project study area.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at Title 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council a reasonable opportunity to comment on such undertakings.

B. Historic Architecture

In a memorandum dated April 12, 2000 the SHPO stated that "we are aware of no historic structures located within the area of potential effect". SHPO recommended that no historical survey be conducted for this project. A copy of the memorandum is included in the Appendix.

C. Archaeology

The State Historic Preservation Office (SHPO), in a memorandum dated April 12, 2000 stated that "it is unlikely that B-3649 will affect significant archeological resources, so no survey is recommended". A copy of the SHPO memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

The project is considered to be a Federal "Categorical Exclusion" due to its limited scope and no significant environmental consequences.

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of the current North Carolina Department of Transportation standards and specifications.

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from the construction of the project.

No adverse impact on families or communities is anticipated. Right of way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

No adverse effect on public facilities or services is expected. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

The proposed project will not require right of way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

This project has been coordinated with the United States Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. Right of way acquisition will be minimal and there are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

This project is an air quality “neutral” project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required.

Noise levels could increase during construction but will be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulation (CFR), Part 772 and for air quality (1990 Clean Air Act Amendments and the National Environmental Policy Act) and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no underground storage tanks or hazardous waste sites in the project area.

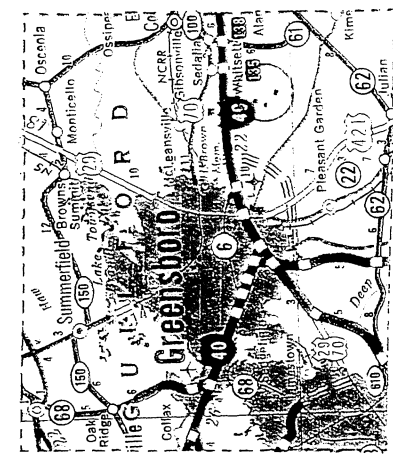
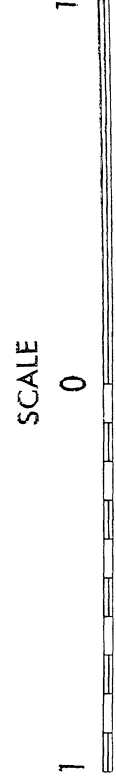
Guilford County is a participant in the National Flood Insurance Regular Program. There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in a crossing of about the same magnitude. All reasonable measures will be taken to minimize any possible harm. The project is not anticipated to increase the level and extent of upstream flood hazard. No substantial floodway modifications will be required.


On the basis of the above discussion, it is concluded that no significant adverse environmental impacts will result from implementation of the project.

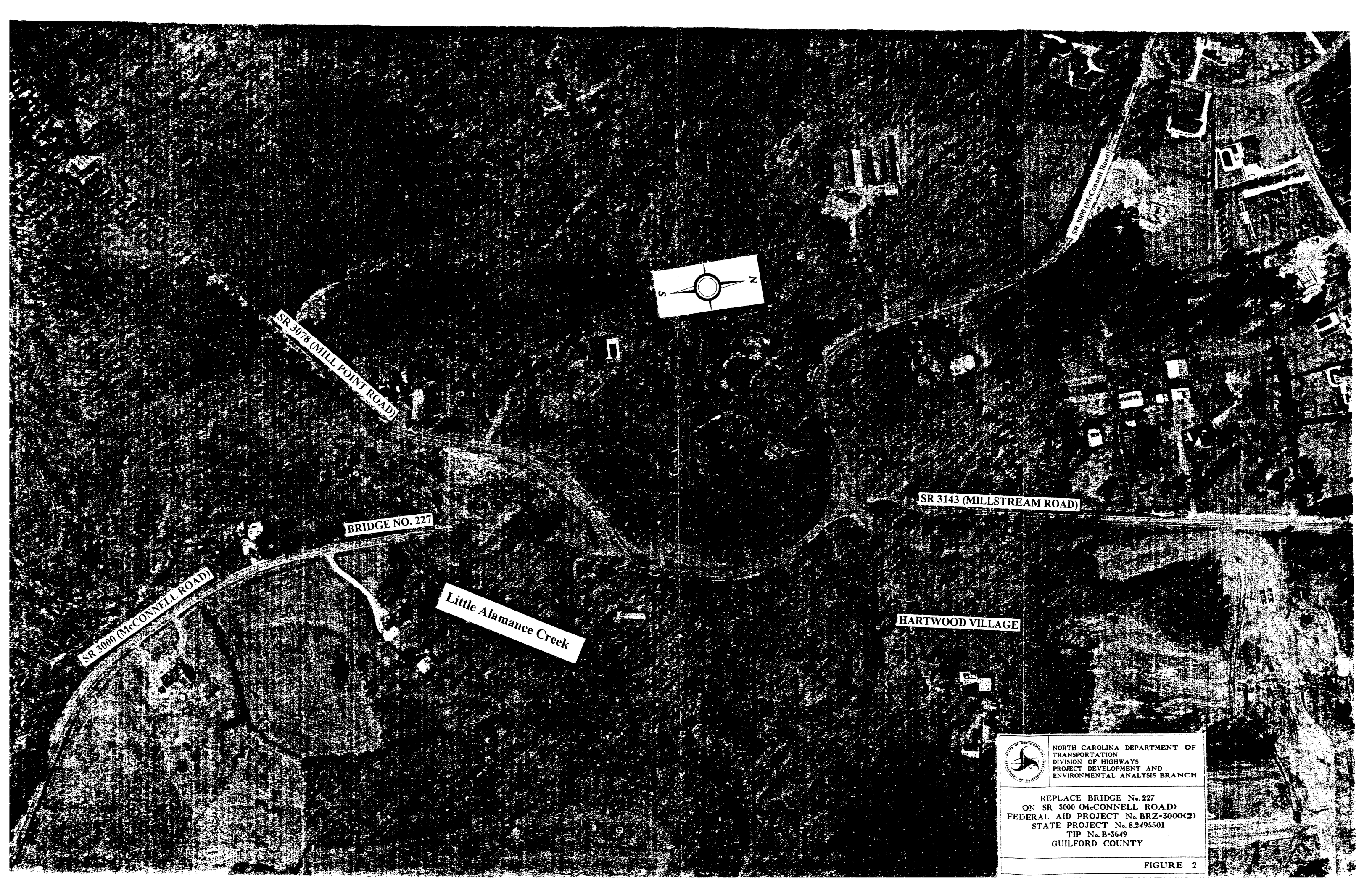
VIII. AGENCY COMMENTS


All comments from federal and state regulatory and resource agencies and local government are included in the Appendix and have been addressed in this document.

FIGURES

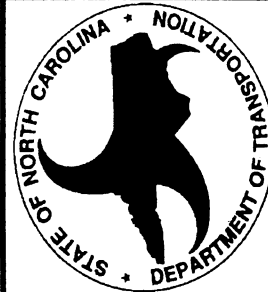
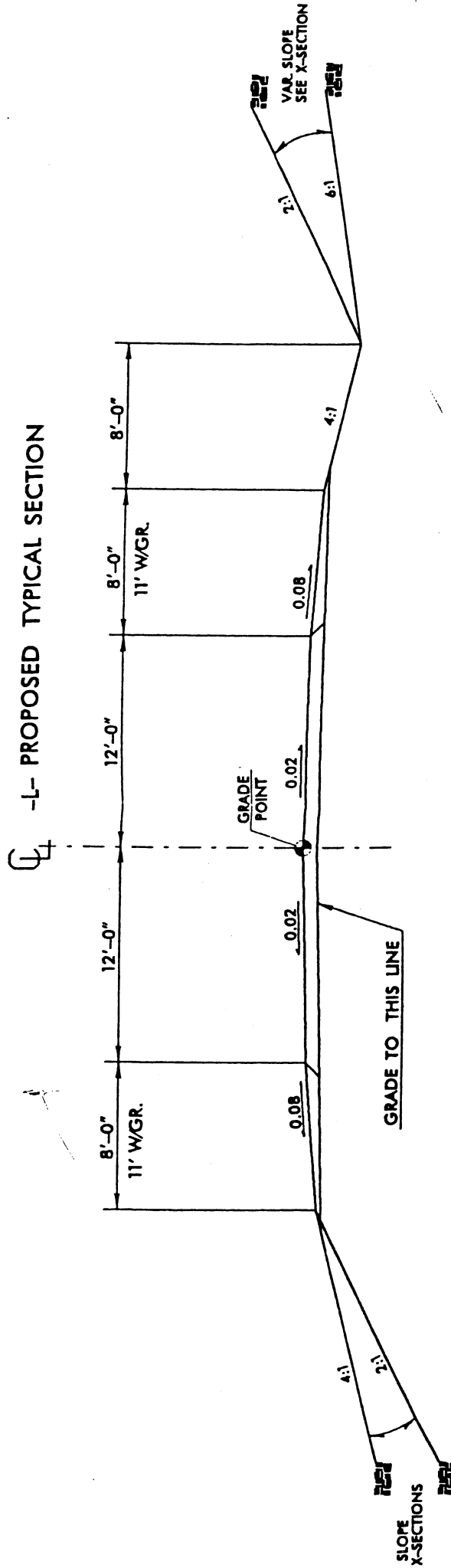


 <p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH</p>	<p>Guilford County</p> <p>Bridge #227 over Little Alamance Creek (B-3649) Bridge #250 over Big Alamance Creek (B-3650) Bridge #359 over Prong Alamance Creek (B-3651)</p>	<p>VICINITY MAP</p> <p>FIGURE 1</p>
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	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH
	REPLACE BRIDGE No. 227 ON SR 3000 (McCONNELL ROAD) FEDERAL AID PROJECT No. BRZ-3000(2) STATE PROJECT No. 8.2495501 TIP No. B-3649 GUILFORD COUNTY
FIGURE 2	

-L- PROPOSED TYPICAL SECTION



North Carolina Department of Transportation

Project Development & Environmental Analysis Branch

Replace Bridge No. 227 on SR 3000 (McConnell Road)

Federal Aid Project No. BRZ-3000(2)

State Project No. 8.2495501

TIP No. B-3649

Guilford County

Figure 3

APPENDIX

Blaloney
State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality



James B. Hunt, Jr., Governor
Bill Holman, Secretary
Kerr T. Stevens, Director

March 3, 2000

MEMORANDUM

To: William D. Gilmore, P.E., Manager, NCDOT, Project Development & Environmental Analysis
From: John Hennessy, NC Division of Water Quality *JH*
Subject: Scoping comments on the proposed replacement of Bridge No. 227 over Little Alamance Creek in Guilford County, State Project No. 8.2495501, TIP B-3649.

This letter is in reference to your correspondence dated January 21, 2000, in which you requested scoping comments for the referenced project. Preliminary analysis of the project reveals that the proposed bridge will span Little Alamance Creek (Climax Cr.) in the Cape Fear River Basin. The DWQ index number for the stream is 16-19-2 and the stream is classified as **Water Supply IV nutrient sensitive** waters. The Division of Water Quality requests that NCDOT consider the following environmental issues for the proposed project:

- A. The document should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping.
- B. There should be a discussion on mitigation plans for unavoidable impacts. If mitigation is required, it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.
- C. Review of the project reveals that no Outstanding Resource Waters, High Quality Waters, or Trout Waters will be impacted during the project implementation. However, impacts to waters classified as Water Supply II will be impacted. The DWQ requests that DOT strictly adhere to North Carolina regulations entitled "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0024) throughout design and construction of the project. This would apply for any area that drains to streams having WS (Water Supply), ORW (Outstanding Resource Water), HQW (High Quality Water), SA (Shellfish Water) or Tr (Trout Water) classifications.
- D. When practical, the DWQ requests that bridges be replaced on the existing location with road closure. If a detour proves necessary, remediation measures in accordance with the NCDWQ requirements for General 401 Certification 2726/Nationwide Permit No. 33 (Temporary Construction, Access and Dewatering) must be followed.
- E. The DWQ requests that hazardous spill catch basins be installed at any bridge crossing a stream classified as HQW or WS (Water Supply). The number of catch basins installed should be determined by the design of the bridge, so that runoff would enter said basin(s) rather than flowing directly into the stream.
- F. If applicable, DOT should not install the bridge bents in the creek, to the maximum extent practicable.

Blalock



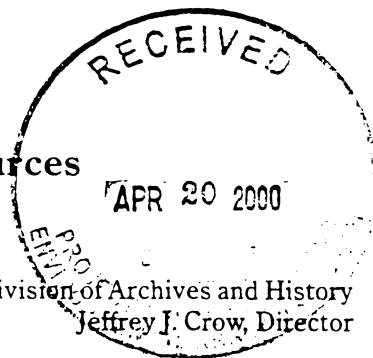
North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director



April 12, 2000

MEMORANDUM

TO: William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
Division of Highways
Department of Transportation

FROM: David Brook *for David Brook*
Deputy State Historic Preservation Officer

SUBJECT: Replacement of Bridges No. 227, 250 & 359, TIP B-3649, B-3650, and B-3651. Guilford County, ER 00-8717

We regret that staff was unable to attend the February 10, 2000, scoping meeting for the above referenced project.

In terms of historic architectural resources, we are aware of no historic structures located within the area of potential effect. We recommend that no historic architectural survey be conducted for this project.

If Bridge No. 250 (B-3650) is to be replaced outside the boundaries of its existing location, please forward the information so we can evaluate the need for an archaeological survey. It is unlikely that either B-3649 or B-3651 will affect significant archaeological resources, so no survey is recommended.

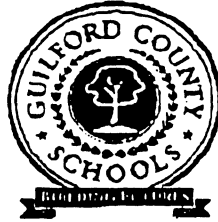
Having provided this information, we look forward to receipt of either a Categorical Exclusion or Environmental Assessment which indicates how NCDOT addressed our comments.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

cc: B. Church
T. Padgett

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
ARCHAEOLOGY	421 N. Blount St., Raleigh NC	4619 Mail Service Center, Raleigh NC 27699-4619	(919) 733-7342 • 715-2671
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

**GUILFORD COUNTY SCHOOLS**

To: Edwin Peters
From: Jeff Harris *Jeff Harris*
Date: 12/07/01
Re: Requested Bridge Data

The purpose of this memo is to respond with the impacts on school bus routing in regards to three specific bridge projects. Information requested relates to bridges on McConnell Rd, Millstream Rd and Wild Turkey Rd. Transportation routing software, TIMS, was used to compile data concerning the number of crossings by buses daily and alternate routes available. Data and information regarding the impact on bus runs is described below separated by bridge location:

Wild Turkey Road

Data indicates school buses do not cross the single lane bridge due to the 9-ton max weight for vehicles.

Millstream Rd – Bridge located between McConnell Road and Mt Hope Church Road

Data indicates school buses cross this bridge 13 times daily. Due to the bridge not being closed during the project, little impact is anticipated on bus runs.

McConnell Rd – Bridge located between Millpoint Road and Keesee Road

Resulting in the proposed closing of this bridge for the project, 12 bus runs will require detouring. The detour will be of minor impact on eight of the runs, causing insignificant or no time/mileage increase. The remaining four runs, two in the morning and two in the evening, use McConnell Road as an access to bus stops in the surrounding area. The greatest concern is bus stops that are on the segment from the McConnell Road Bridge south to Keesee Road, stops are located at the addresses 4417 and 4481 McConnell Road. Closing the bridge will cause a dead end segment; a bus turnaround location will be required at or after 4417 McConnell Road. The other alternative is to move the stop locations for these students to another location not affected by the closed segment.

Please include in your project documentation, the Guilford County Schools Transportation Department is requesting at least a two-week notice before beginning the McConnell Road project. This will allow our staff time to change the path of travel of bus runs and to make adjustments for the stops affected on the closed segment.